

50 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

October 1955



A MCGRAW-HILL PUBLICATION



There's a **Torcon** unit to meet your job requirements

Here is a complete line of torque converters designed to meet a wide range of engine applications in all industrial fields.

The Clark Torcon unit is a three-element single stage converter of simple design, mass-produced. It is available off-the-shelf to owners and operators of equipment, as well as to manufacturers.

HORSEPOWER RANGE

... 15 to 600

DIAMETERS

... 11" to 26"

COMPLETE CHOICE

of options for easy fit into practically any torque transmission system.

For full information refer to illustrated easy-to-read Torcon bulletin.

CLARK
EQUIPMENT



This helpful bulletin describes TORCON advantages . . .

Send for it

- **True Hydra-Foil Blade Design**
—a patented feature. Correct combination of blade contour and angles assures smooth oil flow, for most efficient torque multiplication. **No cavitation** to cause turbulence or air pockets which impair efficiency and cause destructive wear.
 - **Self-Contained Oil Circuit**
—Sump is cast integral, and oil passages are cored in the housing. No unnecessary hoses and fittings; no external oil seals under pressure.
 - **Easy Accessibility**
—Inspection plates are easy to get at; no special tools needed.
 - **Individually Cast One-Piece Elements**
—no welds or fabrications to distort under extreme loads.
- Every user of horsepower will find this bulletin well worth reading. The coupon brings your copy promptly—no obligation.

CLARK EQUIPMENT COMPANY

Jackson 1, Michigan

☐ Please send copy of The Torcon Bulletin

Name _____ Position _____

Firm _____

Address _____

City _____ Zone _____ State _____

B.F. Goodrich



All-Nylon tires roll 5,000 hours on original tread, user reports

SUPPLYING a host of materials to the construction industry—from concrete and brick to crushed stone and gravel—is the job of the Consumers Co., of McCook, Ill. Trucks without springs carry 15 tons of rock over the unsurfaced road from diggings to crusher. This means the tires must take all the shock.

B. F. Goodrich *all-nylon* tires do the

job, Consumers Co. reports. They give up to 5,000 hours of service, and are 50% less susceptible to tire-killing, production-stopping blowouts.

How nylon saves you money

Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. That's why the B. F. Good-

rich *all-nylon* tire body outwears even its extra-thick tread, can be recapped over and over! You get more original hours of service, more hours of service per recap.

Your B. F. Goodrich retailer has a complete line of *all-nylon* off-the-road tires. Find out from him how you can save money, no matter what kind of work you do. His address is listed under Tires in the Yellow Pages of your telephone book. Or write The B. F. Goodrich Co., Tire & Equipment Division, Akron 18, Ohio.



ALL-NYLON Rock Logger and Universal tires under 15-ton load on the way to the rock crusher.



CONSUMERS trucks travel up steep $\frac{3}{4}$ -mile road from diggings. *All-nylon* tires resist bruising and sidewall scuffing.

Specify B. F. Goodrich tires when ordering new equipment



Hold Tight!

Get a Better Grip on Your Work with **PROTO** Professional-Quality Pliers

Sensational "Multi-Plier" multiplies your gripping power 10 times!



There's no substitute for the *right* plier when you need it. Choose exactly the ones you need from the huge PROTO line — standards, midjets, side cutters, end nippers, slip-joint and special purpose pliers—all made from fine steels. You'll get powerful leverage, and comfortable, positive-grip handles. Buy the ones you need from your PROTO Dealer! Send 10¢ for catalog of entire line to **PLUMB TOOL COMPANY** 2245Q Santa Fe Ave., Los Angeles 54, Calif.

Try Comfortable PROTO Handeze Plier Grips



More hand comfort with replaceable, colorful vinyl plastic grips! Three sizes fit most pliers. Many PROTO Pliers already equipped. See your dealer today!



Eastern Factory, Jamestown, N. Y. • Canadian Factory, London, Ont.

CONSTRUCTION

Volume 37

Number 10

METHODS AND EQUIPMENT

Established 1919

October 1955

Publisher R. F. ROGER

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Layout: NELLE FITZGERALD

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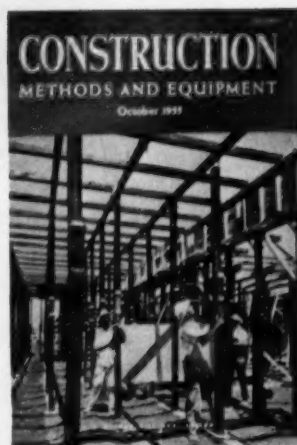
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On the Cover

The pretty green paint on the wood-forming members in this month's cover picture is not just the whim of some beauty-minded contractor. These members are painted because they will be used over and over again—maybe several hundred times. The contractor, Builders Construction Co. of Oklahoma City, Okla., is using a forming system devised by Elis Equipment Co., also of Oklahoma City. Elis manufactures the metal parts—the shore clamps, jacks, slip-in shore holders, and shore-head clamps—that make the system work. The photo shows its use in construction of Oklahoma City's \$4 million Classen High School.



Member

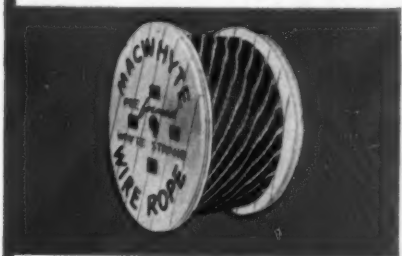


Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder.

Editorial, Executive and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director.

Subscriptions: Address correspondence to Construction Methods and Equipment—Subscription Service, 330 W. 42nd St., New York 36, N. Y. Allow ten days for change of address. Subscriptions are solicited only from persons engaged in construction or in supplying the construction industry. Position and company connection must be indicated on subscription orders.

Single copies 50¢. Subscription rates—United States and possessions \$3.00 a year; \$4.00 for two years; \$5.00 for three years. Canada \$4.00 a year; \$6.00 for two years; \$8.00 for three years. Other Western Hemisphere and the Philippines \$10.00 a year; \$16.00 for two years; \$20.00 for three years. All other countries \$15.00 a year; \$25.00 for two years; \$30.00 for three years. Second class mail privileges authorized at New York, N. Y. Printed in U.S.A. Copyright 1955 by McGraw-Hill Publishing Co., Inc.—All Rights Reserved.



Prompt Service

SLINGS · WIRE ROPE · ASSEMBLIES

Your wire rope needs, whether they be for Round-Braided Slings, Cable Assemblies, or Wire Rope, are given prompt service by Macwhyte Company distributors.

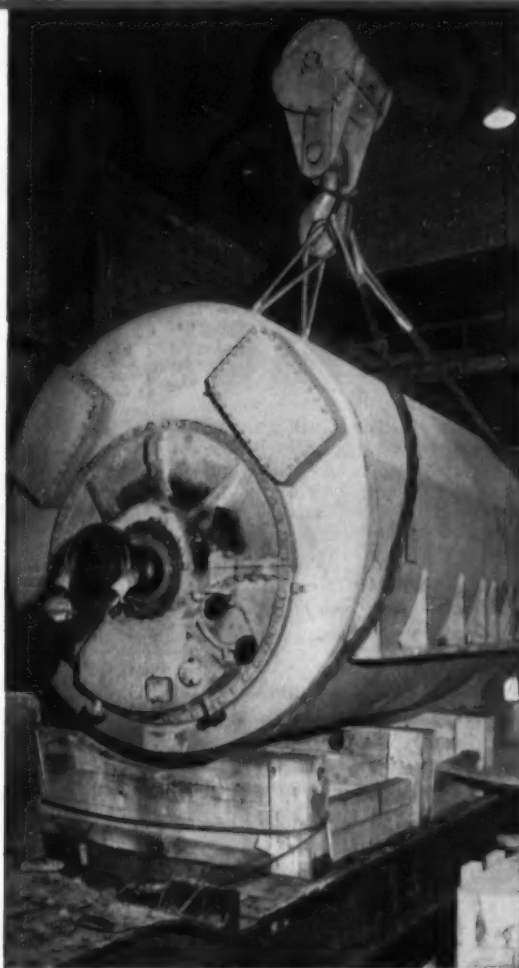
Macwhyte manufactures a wide variety of sizes and types to provide materials best suited to your needs.

MACWHYTE

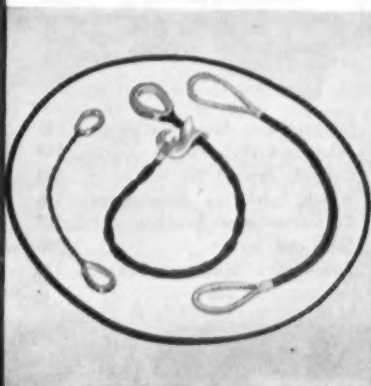
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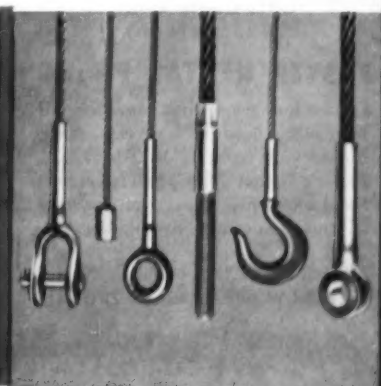
ROUND-BRAIDED SLINGS: Two Macwhyte ATLAS Round-Braided Slings handling 125-ton generator unit. These are Type No. 1 Slings made of alternate left and right lay wire rope, braided for light weight, maximum flexibility, and safety.



SLINGS: Macwhyte makes a wide range of sizes and types of Braided and Single-Part wire rope slings. Custom designs are made to meet special needs. For information, ask for Catalog S-8.



WIRE ROPE: There is a right rope for each equipment need. Catalog G-16 lists all classifications and sizes, also included is general information on handling and use of wire rope.

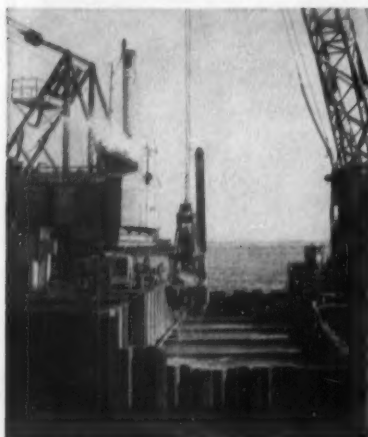


ASSEMBLIES: Macwhyte "Safe-Lock" Wire Rope Assemblies are made in a wide range of sizes, with fittings permanently attached to one or both ends. Many standard types are listed in Catalog No. 5201.

Save Time on Tough Schedules — **FOSTER RENTAL PILING**

A phone call to Foster will provide exact sections of steel-sheet Piling you need. You can always depend on L. B. Foster Company for the piling you specify—in the exact lengths required—and on time deliveries.

You'll save time, speed-up pile driving operations and better your job schedules when you Rent Your Piling from L. B. Foster Company.



Foster Rental Piling forms cofferdams used in construction of the piers for the MULLICA RIVER BRIDGE Garden State Parkway

FOSTER RENTAL PILING

Contractors everywhere save on all their piling needs with prompt, exacting service from L. B. Foster Co. Foster's Rental Plan provides a low, fixed expense—gives you an extra advantage in competitive bidding.

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Pay Dirt in This Issue

October, 1955

Northeast Rebuilds After Devastating Flood 50

Hundreds of contractors, working with all kinds of equipment and materials, are putting up temporary bridges, repairing washouts, and cleaning up clogged river channels in the flood-torn areas of Connecticut and Pennsylvania.

Cast-Iron Clip Speeds Concrete Slab Forming 58

New device paves the way for builders to substitute concrete for standard wood floors at no extra cost.

Prefabricated Forms Cut Bridge Cost 60

Integral form and reinforcing assembly saves bridge contractor 50% in time and labor on pier construction.

Does Your Insurance Really Protect You? 64

A specialist in construction insurance tells how to get adequate coverage. The first of a three-part series.

Steel Trusses Support Thin-Shell Roof Pour 74

Arch-truss falsework for big barrel-vault concrete structure converts to tied arches when moving ahead.

Mixed-in-Place Bituminous Paving 90

The second in CM&E's series of articles on paving describes the best ways to lay mixed-in-place surfaces.

Australian Tunnel Crews Compete for Records 114

Working from three headings, crews at the Eucumbene-Tumut Tunnel compete to break their own world records.

Movable Tubular Towers Speed Deck Forming 124

Contractor realizes savings up to 30% in shoring labor and material-handling costs by novel use of scaffolds.

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**NEXT
MONTH**

Transferring the load of a huge building from its caissons to the top of a tunnel being drilled beneath it is a ticklish underpinning problem. A CM&E editor went down under Chicago's Main Post Office to see how it was done by a team of specialists at this—Spencer, White and Prentis.

Precast, Prestressed 'Incor' Concrete Warehouse



Left, Interior of ultra-modern warehouse of Meyer Brothers Drug Co., New Orleans, with precast, prestressed girders and purlins, precast columns and roof slabs. Design live-load, 30 lbs. per sq. ft.; column centers, 37' x 33'. Above, completed warehouse, 187' x 291'. Dependable 'Incor' high early strength speeded fabrication ... frame erected in 18 working days.

ERECTED IN 18 DAYS

Here is prefabrication *plus*... that is, the important initial economies of precast, prestressed concrete design, *plus* the utmost fire-safety and lowest annual cost of quality concrete.

The 36-in. deep 'I' section girders and the 22-in. deep 'T' section purlins are precast, prestressed concrete; the 12" x 12" columns, lengths 10' and 14', and the lightweight, tongue-and-groove roof slabs, 3' x 16' x 7' 4", were all precast.

Cost in place of prestressed members and precast columns was 70 cents per sq. ft. Total cost of the 55,000 sq. ft. warehouse, \$269,000.

Entire framework and roof slabs erected in 18 working days... result of factory-made members, produced to closest tolerances for rapid assembly, with minimum supervision.

Result, too, of high-speed, line-production in the

pretensioning bed, made possible by the dependable high early strength of 'Incor' 24-Hour Cement. Precast one day, prestressed the next... maximum production at minimum cost... hallmark of America's FIRST high early strength portland cement.

*Reg. U. S. Pat. Off.

MEYER BROTHERS DRUG COMPANY
Wholesale Druggists—Warehouse

Architect: GEORGE M. LEAKE

Consulting Engineer: WALTER E. BLESSEY

Contractor: A & O BUILDERS

Members Precast, Prestressed & Installed by
ALATEX CONSTRUCTION SERVICE INC.,

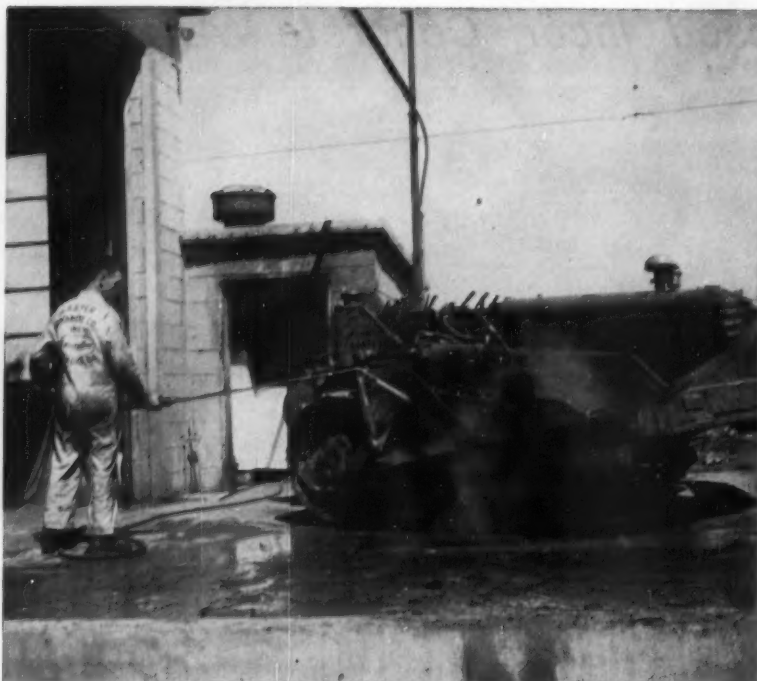
—all of New Orleans, Louisiana



LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA.
BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 141,600,000 SACKS ANNUAL CAPACITY



In 60 minutes or less, MALSARY 250 steam cleaner completely removes mud, dirt-impregnated grease and sticky tars from this Caterpillar D4, in for overhaul.

Does Steam Cleaning Pay?

Here's what users of Malsbary HPC Cleaners report:

Doubles track roller life—Greasy, abrasive ore dust and caked mud wore out track rollers in 1200 hours on the Mesabi Range. Then the maintenance superintendent began steam cleaning every 24 hours, just before greasing, reports: "We now are getting 2400 hours or more on rollers."

Repaints without hand cleaning—Cleaning asphalt, road oil and briquet binder from 40 tank trailers was strictly hand work until a MALSARY HPC cleaner took on the job. It quickly softens and blasts away these sticky materials, leaves an excellent surface for repainting.

To handle such tough cleaning jobs requires lots of water or steam plus real impact. You get both in MALSARY HPC cleaners.

HPC means high pressure combination—MALSARY HPC cleaners use pumps for pressure instead of steam. You have choice of cleaning with cold water, hot solution (steam), or hot rinse—combined with pressures to 400 p.s.i. These pressures literally explode water or steam (to 325° F.) from the cleaning nozzle, blast away stubborn asphalts and

caked dirt other cleaners can't touch. MALSARY high impact and volume (360 to 2100 g.p.h., depending on cleaner size) results in such average cleaning times as—

D7, D8 tractors	1½ - 2 hrs.
TD9 Dozers/shovel	2 hrs.
Motor grader	3½ hrs.
1½-yd. shovel	3-4 hrs.
Payloader	45 mins.

In addition, MALSARY HPC cleaners supply wet steam for cleaning and degassing tanks and hot water for concrete mixing in zero weather.

Why settle for a halfway cleaner when a MALSARY can handle all your cleaning needs? Try it. Ask your MALSARY dealer to demonstrate on your job now... or write today for Catalog 150-R and "Why and How of Steam Cleaning" folder. 55



Room C, 845 92nd Avenue Oakland 3, Calif.

Job Talk...

...About Concrete Finishing

Power tools rapidly are replacing hand methods of finishing hardened concrete. They are faster and more economical, and they reduce worker fatigue.

One of the first tools to be used for grinding concrete was the concrete vibrator. The vibrator head was removed from the flexible shaft, and a geared right angle head with a disk or grinding wheel attached was substituted. This is still in use, but manufacturers now are developing special lightweight electric flexible shaft tools and grinding disks.

Basically, there are two types of concrete finishing—dry grinding and wet rubbing. Dry grinding is done on concrete surfaces to remove fins and marks caused by forms. Wet rubbing is applied to green concrete to bring up wet cement and work into a smooth surface.



Dry Grinding

Workman uses flexible shaft grinding machine to remove fins and form marks at an office building job in Johnson City, N. Y. Contractor is Frank O'Connell of Binghamton, N. Y. The grinder was manufactured by Stow Manufacturing Co. of Binghamton.

(Continued on page 14)

Engineered for the toughest off-the-road operation...

NEVER BEFORE A CHASSIS GREASE SO TOUGH

*New Purelube H.D.
Chassis Grease lasts 1½
to 2½ times longer than
available chassis greases*



Here's the toughest chassis grease made. It's the new Purelube Heavy Duty Chassis Grease.

It was developed for the most severe load and operating conditions. It won't splatter out, even on continuous off-the-road pounding.

Proving ground tests showed that this new grease stays on the job 1½ to 2½ times longer than greases generally used for chassis lubrication. In extensive field tests, it continued to protect chassis parts when all other greases had failed.

Now we want to prove it to you in your own equipment, on your own operation.

Lubricate one of your vehicles with the new Purelube Heavy Duty Chassis Grease. Use any competitive grease you choose on a similar piece of equipment operating side by side. Keep a record of the two vehicles and see for yourself the results of the on-the-job comparison.

Do it now. Mail the coupon, or call your nearest Pure Oil office. (Offer limited to PURE'S marketing area.)



SEND FOR FREE FOLDER!

**Be sure
with Pure**

The Pure Oil Company, Dept. CM-510
35 E. Wacker Drive, Chicago 1, Ill.

- () Please send free folder giving complete specifications on New Purelube H.D. Chassis Grease.
- () I would like a free demonstration of this new chassis grease.

Name _____

Company _____

Street _____

City _____

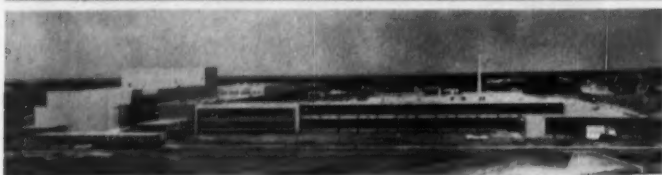
Zone _____ State _____

Sales offices located in more than 500 cities in PURE'S marketing area.

Elis Shoring Methods

SAVE TIME AND MONEY ON SCHOOL CONSTRUCTION IN SOUTHWEST!

(SEE FULL COLOR DETAIL ON COVER)



Front view of same building.

BUILDERS CONSTRUCTION COMPANY, contractors on Oklahoma City's new senior highschool, used Elis Shoring Methods for all concrete forming work on this job. Elis Shore Clamps, Jacks, Shorehead Clamps, Slip-In Shoreholders, and Sticks proved faster and safer, with greatly reduced costs for all shores, purlins, and joists.

Using Elis Products, ten or more slip-in shores can be erected in less time than it takes to measure, cut, splice, block and wedge a single shore with old-fashioned methods.

Mail this Coupon for Additional Information

Elis Equipment Co., Inc., 211 N.W. 4th St., Oklahoma City, Okla.
Please send, at no obligation, more information on Elis Methods.

Name

Firm

Address

City

State

Manufactured by Elis Equipment Co., Inc.
211 N.W. 4th Street, Oklahoma City, Okla.

Top photo shows an overall view of new highschool . . . Elis Shores used throughout

ELIS METHODS ARE BEING USED ALL OVER THE UNITED STATES AND CANADA

Listed below are a few of the thousands of structures on which ELIS Products have been used:

The Underground Parking Garage under Grant Park and Michigan Avenue, Chicago, Illinois
Chrysler Jet Engine Plant, Detroit, Michigan
Vernon Avenue Bridge, New York City, New York
I. B. M. Building, Poughkeepsie, New York
Kentile Building, 2nd Avenue and 6th Street, Brooklyn, N. Y.
Prentice Hall Structure, Englewood Cliffs, New Jersey
Sacred Heart Hospital, Manchester, New Hampshire
Broadway Market Parking Garage, Buffalo, New York
Bell Telephone Building, Ithaca, New York
Hospital Westover Air Force Base, Chicopee, Massachusetts
Physical Education Bldg., Northeastern Univ., Boston, Mass.
National Biscuit Company, Philadelphia, Pennsylvania
New Allegheny County Institution, Pittsburgh, Pennsylvania
Huron Road Hospital, Cleveland, Ohio
City-County Court House, Madison, Wisconsin
Reservoirs for Cities of Minneapolis and St. Paul, Minnesota
Security Trust and Savings Bank, Billings, Montana
Bannock County Court House, Pocatello, Idaho
The Bon Marche Addition, Seattle, Washington
Post Office Terminal Annex, Seattle, Washington
St. Vincent's Hospital, Portland, Oregon
Auditorium, Omaha, Nebraska
5-Story Men's Dormitory, Cornell College, Mt. Vernon, Iowa
West Side Junior High School, Indianapolis, Indiana
Duke Power Company Office Building, Charlotte, N. C.
Research Reactor Bldg. No. 3042, A. E. C. Oak Ridge, Tenn.
Mid-Continent Airport, Kansas City, Missouri
Doctors' Building, St. Louis, Missouri
Municipal Airport and Boeing Aircraft Bldg., Wichita, Kans.
12-Story Telephone Building, Tulsa, Oklahoma
Y. M. C. A. Buildings, Tulsa and Oklahoma City, Oklahoma
Water Storage Reservoir, City of Salt Lake City, Utah
San Jose Sewage Treatment Plant, San Jose, California
Porterville State Hospital, Porterville, California
Lab-Chemical-Biology Buildings, Cal Tech., Pasadena, Calif.
Sandia Air Force Base Building, Albuquerque, New Mexico
Dallas Memorial Auditorium, 719 S. Akard St., Dallas, Tex.
Sears Building, San Antonio, Texas
Municipal Building, Baton Rouge, Louisiana
First National Bank Parking Garage, Shreveport, Louisiana
Windsor Corporation Building, Jacksonville, Florida
Raleigh Park Apartments, Miami, Florida
Camp Gagetown Project, Oromocto, New Brunswick, Canada
Canadian International Paper Co., LaTouche, P. Q., Canada
Aluminum Company of Canada, Kitimat, B. C., Canada
Edmonton City Reservoir, Edmonton, Alberta, Canada

ELIS PRODUCTS ARE SUPPLIED TO CONTRACTORS ON SALE OR RENTAL BASIS

WHY BE SATISFIED WITH LESS THAN **ALL** NORTHWEST ADVANTAGES?

- "Feather-Touch" Clutch Control makes operation easy without complicated, delicate mechanisms.
- Wide range of Boom Hoist Equipment, including self-locking worm or independent high-speed boom hoists.
- Uniform Pressure Swing Clutches take the jerks and grabs out of swinging.
- Ball and roller bearings on all high-speed shafts (standard on Northwests since the first one was built).
- Cast Machinery Bases and Machinery Side Frames for permanent shaft alignment.
- Helical gear drive running in oil—the finest thing in gearing.
- Traction and steering that gets you there—and back. Travel gears fully enclosed and running in oil.
- Fully convertible to Dragline, Shovel and Pullshovel by simply changing booms.
- Northwest Dual Independent Shovel Crowd that utilizes force most independent crowd shovels waste.
- Cushion Clutch eliminates effects of shock overloads to parts under power before overload reaches machinery.

A piece of equipment represents a package of advantages that, when properly applied, will make money for you! The more advantages you get, the more versatile the equipment—and the easier it will be to make money with it.

Northwest Crawler and Truck Mounted Shovels, Cranes, Draglines and Pullshovels bring you a combination of advantages that have been proved over the years as real money makers. They combine to give a smoothness of operation, easier upkeep and a versatility that has established them not as just a "Good Shovel," a "Good Crane" but as an outstanding leader whether equipped as a *Shovel, Crane, Dragline or Pullshovel*. Don't be satisfied with less than ALL Northwest Advantages. Ask a Northwest Man to go over the full list with you.

NORTHWEST ENGINEERING COMPANY
150 Field Building, 135 South La Salle Street
Chicago 3, Illinois

NORTHWEST

CRANES and TRUCK MOUNTED SHOVELS - CRANES - DRAGLINES - PULLSHOVELS

YOU CAN'T HAVE
**NORTHWEST
ADVANTAGES**
UNLESS YOU OWN
A NORTHWEST

NOW...out of 250 million hours of flight experience

A NEW AIR-COOLED INDUSTRIAL ENGINE



RUN FOR MORE THAN 1,600 CONTINUOUS HOURS! In Williamsport, Pa., this C2-90 was test-run in an actual pumping application for more than 1,600 hours continuously, without overhaul or any service except gas and oil. The engine is still in active service as a demonstrator.

**Designed specifically
to solve construction
industry problems:**

NEW! Reserve Power—C2-90's full-power rating provides a ready reserve for generators, pumps, pavers, crushers, mixers, etc.

NEW! Long Life—the C2-90 is a ruggedly built industrial engine specially designed to outlast any other engine on the market.

NEW! Cooling Design—to avoid overheating that comes with dust conditions, the C2-90 provides improved cooling surfaces, a cooling fan that operates through entire speed range, and pre-cleaners.

NEW! All-Weather Performance—the C2-90 advanced air-cooled design performs normally in extremes of heat and cold.

In addition, this short-stroke, oversquare engine has the advantage of modern, high-speed operating ranges.

Specifically designed construction equipment accessories are available: gear-driven hydraulic pump; front-end power take off; various power take-off adaptations, i.e., pulley drives and various reductions for engine and anti-engine rotation.

comes

THE FULL-POWER LYCOMING C2-90

Rated 30 h.p.! Delivers 30 h.p.!




The C2-90 is the result of a quarter century of aircraft experience ... built to the same high standards that have made Lycoming a top name in engines for aircraft—which demand *absolute* dependability. That is why the C2-90 does just what we say it will do—works at *full power* under the most rugged conditions. So why buy an engine you have to de-rate (up to 50% for continual-duty service)? Here is an engine which continually delivers *full power*!

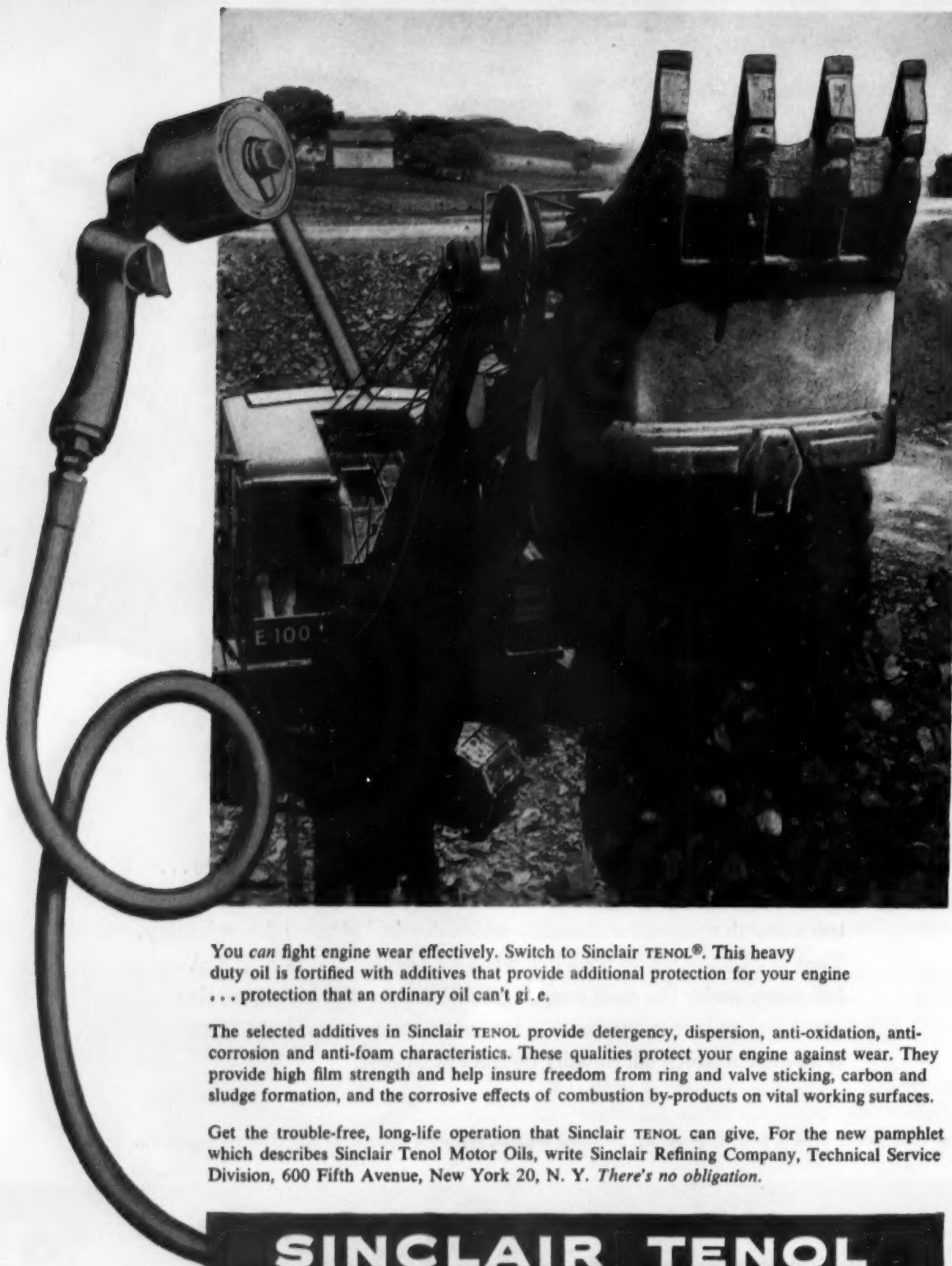
For more details write to Sales Engineering, Industrial Engines, Lycoming Division of AVCO, Williamsport, Pa.

SOON TO COME! New opposed twins, opposed 4's and V-4's for all applications up to 75 h.p.

LOOK TO **Lycoming**

DIVISION OF  **DEFENSE AND INDUSTRIAL PRODUCTS**
LYCOMING • AVCO ADVANCED DEVELOPMENT • CROSBY
POWER PLANTS • ELECTRONICS • AIR-FRAME COMPONENTS • PRECISION PARTS

FIGHTS WEAR!



You can fight engine wear effectively. Switch to Sinclair TENOL®. This heavy duty oil is fortified with additives that provide additional protection for your engine . . . protection that an ordinary oil can't give.

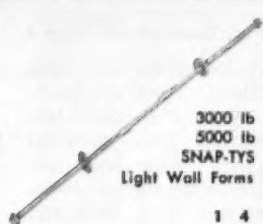
The selected additives in Sinclair TENOL provide detergency, dispersion, anti-oxidation, anti-corrosion and anti-foam characteristics. These qualities protect your engine against wear. They provide high film strength and help insure freedom from ring and valve sticking, carbon and sludge formation, and the corrosive effects of combustion by-products on vital working surfaces.

Get the trouble-free, long-life operation that Sinclair TENOL can give. For the new pamphlet which describes Sinclair Tenol Motor Oils, write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR TENOL

RICHMOND REFERENCE GUIDE FOR YOUR CONCRETE CONSTRUCTION NEEDS

CUT OUT
AND FILE



3000 lb
5000 lb
SNAP-TYS
Light Wall Forms

1 4



1/2" to 1 1/2"

2 STRUT
TYSCRUS
Heavy Wall Forms

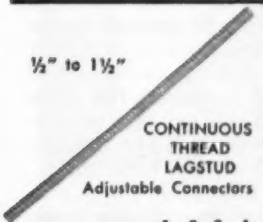
1 2 3 4



1" to 1 1/2"

4 STRUT
TYSCRUS
Mass Concrete Forms

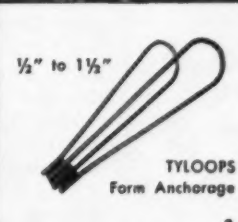
2 3



1/2" to 1 1/2"

CONTINUOUS
THREAD
LAGSTUD
Adjustable Connectors

1 2 3 4



1/2" to 1 1/2"

TYLOOPS
Form Anchorage

3



3/8" to 1 1/2"

SCREW ANCHORS
AND BOLTS
Anchorage to Concrete

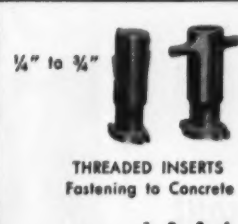
2 3



1 1/4" - 1 1/2"

WHIRL-WIND
ANCHORS
(No Slip)
Lift Form Anchorage

3



1/4" to 3/4"

THREADED INSERTS
Fastening to Concrete

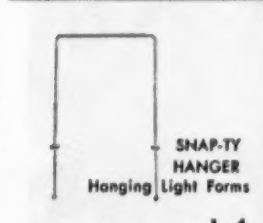
1 2 3 4



3/4" - 3/4"

PEERLESS WEDGE INSERT
Shelf Angle Support

1



SNAP-TY
HANGER
Hanging Light Forms

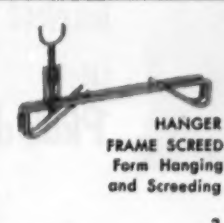
1 4



1/2" to 1

TYHANGER
Hanging Heavy Forms

1 2 4



HANGER
FRAME SCREED
Form Hanging
and Screeding

2



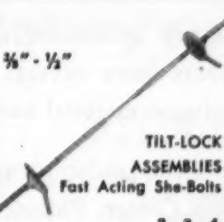
ADJUSTABLE
SCREED CHAIR
Screeding Slabs

1 2 4



REINFORCING
BAR SUPPORTS
Steel Support

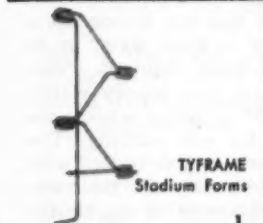
1 2 3 4



3/8" - 1/2"

TILT-LOCK
ASSEMBLIES
Fast Acting She-Bolts

2 3 4



TYFRAME
Stadium Forms

1



DOWEL
SUPPORTS
Road Joint

2



LOAD
TRANSFER
ASSEMBLIES
Airport Slabs

2

buildings

roads & bridges

tunnels & dams

water & sewage
PLANTS

The above is a partial showing of the 358 items contained in the Richmond line of engineered concrete form-tying devices, anchorages and accessories—the largest line in the field. All items are designed for specific uses, not only for the fields pictured above but also for the building of stadiums, grand stands, auditoriums, retaining walls, curtain walls, silos, etc. Whatever your concrete construction needs, contact Richmond. Richmond products are engineered to give you extra strength, ease of handling, utmost economy. Write for complete catalogue. If you have a specific problem, Richmond's Technical Division or field service men will be glad to submit drawings, engineering data and proposals. Address:
RICHMOND SCREW ANCHOR CO., INC. — 816 Liberty Ave., Brooklyn 8, N. Y. and 315 South Fourth St., Saint Joseph, Mo.

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... AND BE SURE IT'S RICHMOND!

Richmond
SCREW ANCHOR CO., INC.

816-838 LIBERTY AVENUE - BROOKLYN 8, N. Y.
315 SOUTH FOURTH ST. • ST. JOSEPH, MO.

RICHMOND REFERENCE GUIDE
FOR YOUR CONCRETE
CONSTRUCTION NEEDS

This is Philadelphia



(Photo used by special permission of the Philadelphia Bulletin.)

Yes, in Philadelphia nearly every contractor uses at least one Owen Bucket — some have several — for excavating—trenching—dredging—material handling.

Soon scores of Owens will dig the landscape and dot the sky in the building of Penn Center, Philadelphia's 22 acre 100 million dollar development.

Years of demonstrated superiority have also established Owen leadership in a majority of other prominent cities. And for rock handling the Owen Grapple is the popular unit.

THE OWEN BUCKET CO.

6020 Breakwater Ave., Cleveland 2, Ohio

BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIFORNIA, FT. LAUDERDALE, FLORIDA



JOB TALK . . . Continued from page 6

Abrasive disks are the best tools for dry grinding. They are made of multiple layers of abrasive-impregnated cotton fiber material bonded together under heat and high pressure with strong resin. Disks usually are 1/4 in. thick and come in sizes of either 7 or 9 in. dia. They can be applied to the work at an angle of approximately 30 to 40 deg using the weight of the tool for pressure. The disks can be attached to any type of portable tool. They should be operated at between 3,000 and 4,000 rpm.



Wet Rubbing

After the workman has removed fins and marks by dry grinding, he paints wet cement on with a brush and rubs it into the air holes. Notice that he has his thumb on a button ready to eject water on to the concrete when required. Pressure tank and hose supply water.

Slow speed grinding wheels are best suited for wet rubbing. The grinding wheel or disk is used with a right-angle head which has various gear reductions to reduce the grinding speed to 300 to 500 rpm. The head is provided with an attachment for a water hose so that water can run through the center of the grinding wheel on to the concrete.

On green concrete, the grinder may be used simply with water. But on dry concrete, workmen first must paint on a coating of wet cement.

(Continued on page 16)



TRENCHING 7 MILES of Indianola Avenue, a heavily traveled thoroughfare in Columbus, Ohio, called for a fast-moving job. The first step in opening the ditch was to

line-cut and break a 7" course of paving brick topped with asphalt. Two 80 lb. breakers, powered by a Jaeger "125" Roto Air-Plus, were used for this work.

How Jaeger "125" Rotary speeds street work

On the above job, the instant-acting control of the Jaeger rotary, enabling it to maintain 100 lbs. minimum pressure under all air demands up to 125 cfm, made it possible to run two 80 lb. breakers at full efficiency, cutting and breaking an average of 400 linear ft. of 3 ft. wide trench (1200 sq. ft.) each 8 hours.

Because the higher efficiency of the Jaeger Roto enables it to operate at more economical engine speeds, fuel consumption on this job averaged only 1½ gallons an hour.

For big work, equally high efficiency is offered in the Jaeger Model 600 rotary. Jaeger reciprocating type compressors also continue to be available in all Jaeger "new standard" ratings with the exception of the 600 cfm size. For full information and comparative prices, see your Jaeger distributor — or send for Catalogs JC and JCR5.

For big work, Jaeger offers the Roto "600", illustrated below. It is the first fully efficient 600 cfm rotary compressor.



Model 600 Roto Air-Plus

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • TRUCK MIXERS • LOADERS • PAVING MACHINES



VERTICAL PRESTRESSING OF CONCRETE walls for a concrete water tank is done with a Re-Mo-Trol hydraulic jack. Six wires, which are secured in the bottom of the wall, are prestressed at one time.

Remote-Controlled Hydraulic Puller Perfected for Prestressing Concrete

*Construction Men Cite
Simplex Unit for Fast, Easy Use*

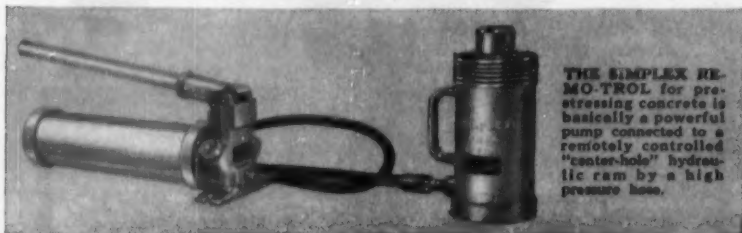
Tensioning cable, wires or rods for concrete prestressing is being done easily and quickly with Simplex hydraulic "center-hole" pullers, a number of construction men report. Because the unit is actually made up of two parts, a remotely controlled ram and a pump, the puller is more easily handled than conventional hydraulic jacks, they explain. The pump unit can be located nearby where it is most convenient for the operator. Many users install a pressure gauge, available as an accessory, between the pump and the puller to check the amount of prestressing applied. This Simplex Re-Mo-Trol puller is also useful on construction jobs as a powerful jack for lifting equipment and building sections, for aligning heavy beams, etc., and for testing the load bearing ability of the soil. Available in 7 models with

capacities from 10 to 100 tons, it works in tight spots and enables workmen to stay at a safe distance while lifting, pulling or pushing.

Made by the world's largest manufacturer of industrial jacks, the Re-Mo-Trol is only one of many Simplex jacks that are useful in the construction industry. Others include the famous Jenny self-contained "center-hole" puller, the No. 310A Emergency Jack which lifts 15 tons on the cap, on the toe, on a cap shoe or at intermediate heights with a chain sling, and standard hydraulic, screw and ratchet lowering jacks. They are all described in General Catalog No. 53. Write for a free copy.

TEMPLETON, KENLY & CO.

2509 Gardner Road • Broadview, Illinois



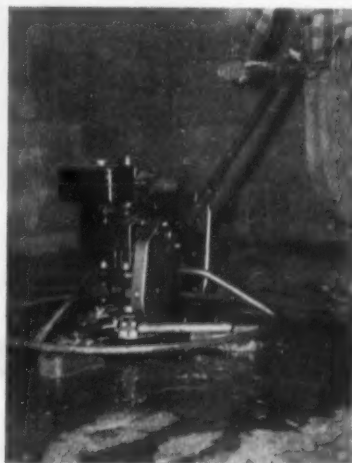
THE SIMPLEX RE-MO-TROL for prestressing concrete is basically a powerful pump connected to a remotely controlled "center-hole" hydraulic ram by a high pressure hose.

JOB TALK . . . Continued

ment with an ordinary hand brush. Then the wet cement is rubbed in, applying water where necessary.

Grinding wheels for wet rubbing often are resinoid-bond cup types with a silicon carbide abrasive. Usual sizes are 4½ and 6 in. dia.

A new development that is equally as good is the waffle pattern disk with fiber backing through which nylon loops have been sewed to provide a strong adhesion between the silicon carbide abrasive section (½ in. thick) and the backing material. The waffle pattern provides a controlled amount of flexibility so that it hugs the work surface and serves to clear the ground particles off the work and out of the disk. The waffle pattern disk should be applied at an angle of about 5 deg to the surface, using only the pressure created by the weight of the tool.




Grinding Floors

The same techniques can be applied for dry grinding or wet rubbing floors. Manufacturers of rotary trowels can supply bricks to be attached in place of the trowel blades. In this way, large floor areas may be ground quickly and easily.

\$4 Million Trans-Canada Highway Job

Dawson Wade & Co., of Vancouver, B. C. are using Tournapull rear dumps and Bucyrus-Erie shovels to excavate and haul rock material on the Trans-Canada highway job in Kicking Horse Canyon through Uoho Park between Field and Golden, B. C.



**2½-yd. LORAIN
completes tough
job ahead of
schedule**

**W. J. MENEFEE CONSTRUCTION COMPANY
GENERAL CONTRACTORS**

2500 West 16th Street

Post Office Box No. 30

SEDALIA, MISSOURI



THE THEW SHOVEL CO.
LORAIN, OHIO

August 8, 1955

Gentlemen:

Our new 2-1/2-yard Lorain, model 85 shovel, used on our Highway 66 project in Franklin County, Missouri, is our 9th Lorain machine.

It, like our other Lorain machines, has been satisfactory to us, and its high production, ease of operation and low maintenance enabled us to complete a tough job ahead of schedule.

We feel the Torque Converter is a definite asset to the machine's operation in hard rock production.

If we were in need of additional shovel equipment, we would buy another Lorain.

Yours very truly,

E. W. Menefee, President

HERE ARE THE FACTS ABOUT THE MENEFEE JOB

240 yards of rock per hour—for a total of 170,000 yards of rock... that's the story of this 2½-yd. Lorain working on the 630,000-yd. contract on U. S. Highway 66, recently completed by W. J. Menefee Construction Co.

THE THEW SHOVEL CO., LORAIN, OHIO

New Catalog on the Lorain "85"

There's a new catalog available on this new, big Lorain that gives you the inside story of its design and performance features. Get your free copy from your Thew-Lorain Distributor or write direct to...

**THE W
LORAIN.**

WHERE THERE'S DUST ... MARFAK'S A MUST

DON'T LET dust ruin your bearings — give them complete protection, longer life with *Texaco Marfak*. This world-famous chassis lubricant stays *in* the bearings, keeping dust and dirt *out*. It guards against wear and rust, prolongs bearing life, reduces maintenance costs.

In wheel bearings, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in — assuring safer braking and protection that lasts for thousands of extra miles, with no seasonal change needed.

More than 555 million pounds of *Texaco Marfak* have been sold. For transmissions and differentials, use *Texaco Universal Gear Lubricant EP*. Gears will run better, smoother, longer . . . at lower maintenance cost.

On crawler mechanisms, *Texaco Track Roll Lubricant* affords constant protection against mud and moisture, keeps bearings rust-free, checks wear.

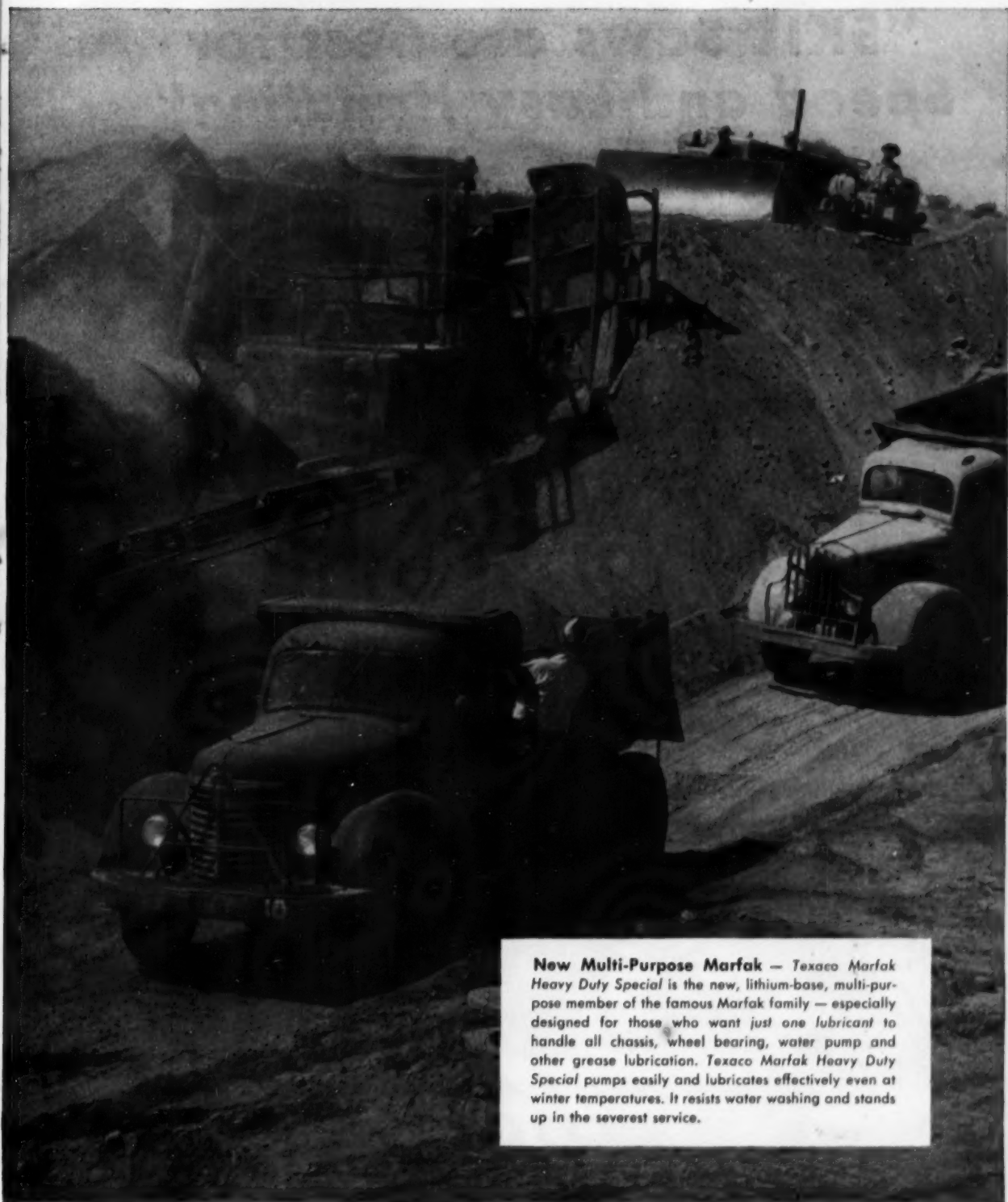
TEXACO SIMPLIFIED LUBRICATION PLAN. Saves time and money, eliminates errors, reduces lubricant inventory — because *no more than six* Texaco Lubricants are needed to handle all major lubrication. Get complete details from your Texaco Lubrication Engineer. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN . . .
TEXACO STAR THEATER
starring
JIMMY DURANTE
on television . . .
Saturday nights, NBC.



TEXACO





New Multi-Purpose Marfak — *Texaco Marfak Heavy Duty Special* is the new, lithium-base, multi-purpose member of the famous Marfak family — especially designed for those who want just one lubricant to handle all chassis, wheel bearing, water pump and other grease lubrication. *Texaco Marfak Heavy Duty Special* pumps easily and lubricates effectively even at winter temperatures. It resists water washing and stands up in the severest service.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

"SKIL Saws are Best for Speed and Easy Handling"

Says **G. C. Hoppensteadt**, General Contractor,
Itasca, Illinois

"Our new 6½" SKIL Saw cuts all the material we use to build our homes. In less than three months it cut every board foot for three homes—each with an average floor space of 2,000 feet! SKIL is best for speed, easy handling and workmanlike results!"

That's how contractors, carpenters and builders everywhere talk about SKIL, as SKIL Saws set records for outstanding, dependable performance. Scientifically balanced handle gives lighter weight, easy one-hand operation. Motor gives ample power for nearly every cutting job... high-speed blade reduces cutting time. SKIL offers all these and other heavy-duty saw features at the lowest prices in SKIL history!

Only SKIL Gives You These Most-Wanted Professional Saw Features

- **Safety Guard Retractor** for pocket cuts and abrasive disc use.
- **Strong Steel Foot** gives full support on cuts from either side.
- **Safest Telescopic Guard Model** Provides maximum protection at all times.
- **Perfectly Balanced Top Handle** gives easy one-hand operation.

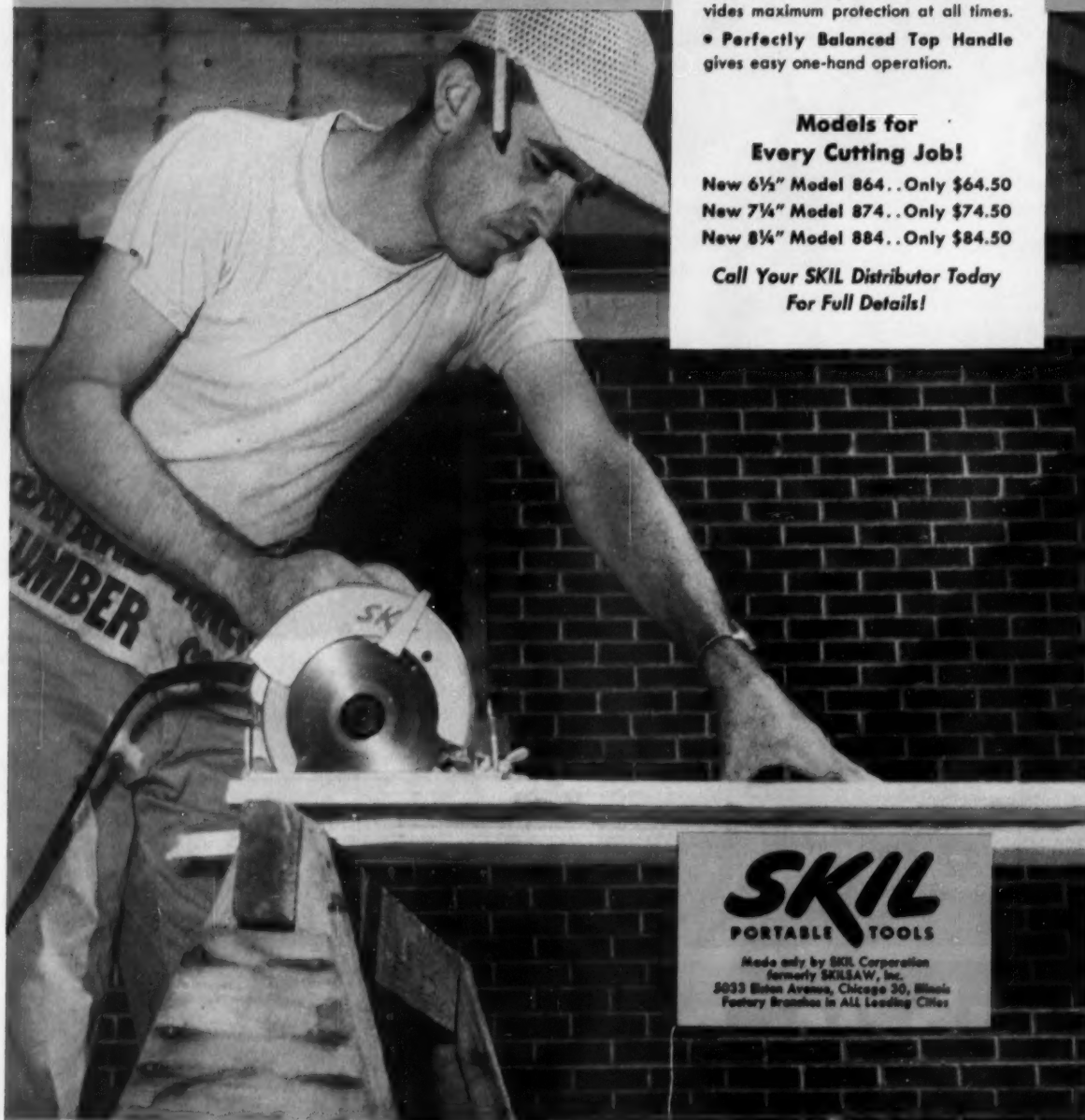
Models for Every Cutting Job!

New 6½" Model 864.. Only \$64.50

New 7¼" Model 874.. Only \$74.50

New 8¼" Model 884.. Only \$84.50

**Call Your SKIL Distributor Today
For Full Details!**



SKIL
PORTABLE TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
Factory Branches in All Leading Cities

Check 'Em!

**ONLY
ADAMS**
Motor Graders
have all these
time and
money-saving
advantages

8 Forward Speeds

✓ Provide the "right" speed for every operation and a higher travel speed. Save time—reduce costs.

4 Reverse Speeds

✓ Up to 13 mph. . . . Save valuable production time backing on short stretches, between forms, etc.

3 "Creeper" Speeds

✓ $\frac{1}{4}$ to $1\frac{1}{4}$ mph. (optional). Use full engine power while gearing grader to slow-speed operation.

Rubber-Mounted Engine

✓ Floating power—no engine vibration transmitted to grader. Increases operator efficiency.

Dual Braking System

✓ Service brake applies hydraulic braking action to transmission as well as wheels. Quicker, safer stops.

Foot Accelerator

✓ Permits operator to drive grader as naturally as truck or automobile. Safer handling in traffic.

New Heavy-Duty Constant-Mesh Transmission

✓ Easy, positive gear shifts at all speeds . . . Heavy construction with helical gears on roller bearings for quietness and long life. The finest ever put into a motor grader.

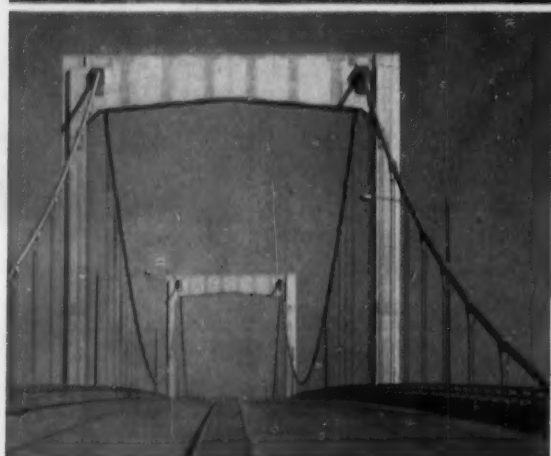
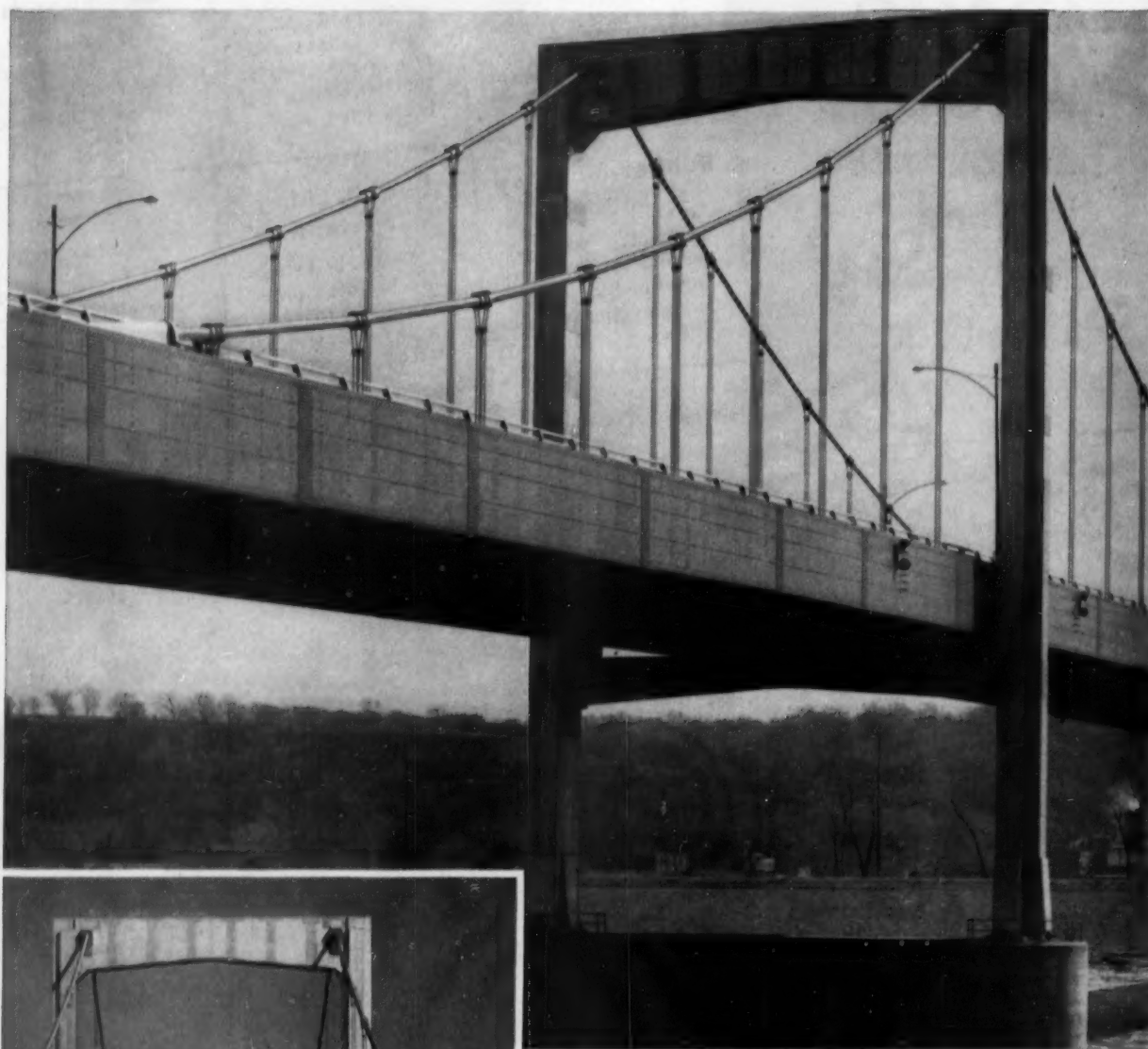


A Product of Adams Division • LeTourneau-WESTINGHOUSE Company • Peoria, Illinois
Subsidiary of Westinghouse Air Brake Company

*Make your next
motor grader an*



Longest **self-anchored** suspension built with American Tiger Brand



The Right Wire Rope
will do the trick!

The main cables and suspender cables were engineered and fabricated by American Steel & Wire Division. The main cables are built up of 37 strands each for a total of approximately 94,350 feet of Tiger Brand Galvanized Bridge Strand.



bridge in the United States

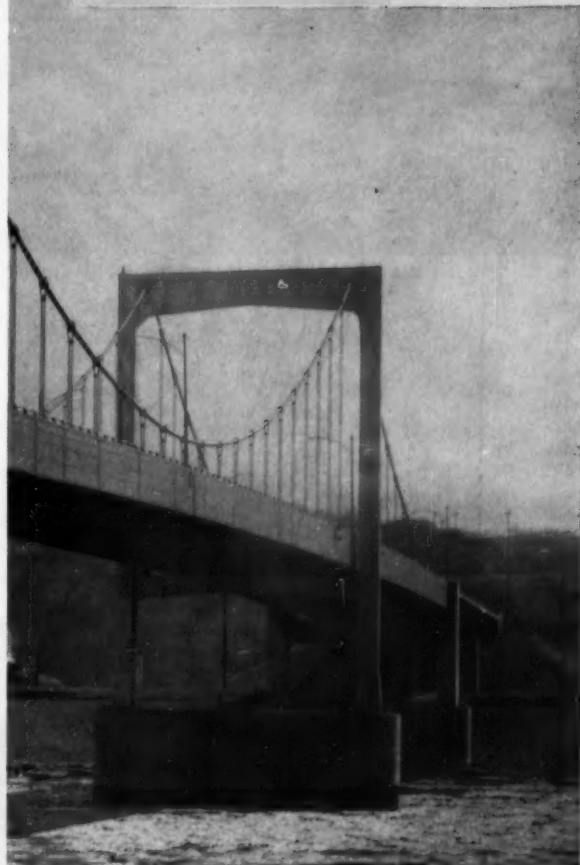
Pre-stressed Bridge Strand

The *Paseo Bridge* at Kansas City

This 1,232-foot bridge spans the Missouri River and is the longest self-anchored suspension bridge in the United States. The total length of the bridge, including two deck plate girder spans is 1,825 feet. Vertical clearance above high water at center of main span is 55 feet.

Engineers: Howard, Needles, Tammen & Bergendoff,
Kansas City, Mo.

Contractor, Fabricator and Erector:
American Bridge Division,
United States Steel Corporation.



THE PASEO BRIDGE over the Missouri River at Kansas City, Missouri, is unique by comparison with other suspension bridges because it is self-anchored. That is, the stiffening girders themselves are designed and utilized to resist the tension of the main cables, instead of having huge anchorages at each end to resist this force.

This bridge has a 616-foot main span and two 308-foot side spans. Main cables are 12 inches in diameter and are built up of 37 strands—31 strands $1\frac{1}{4}$ -inch diameter plus 6 strands $\frac{1}{2}$ -inch diameter. The cables are approximately 1,275 feet long and have a total combined strength of 27,500,000 lbs. To complete the main cables, galvanized soft steel wire is spirally wrapped around the combined strands to protect the cable and provide a smooth surface for painting.

Before shipping, the strands were pre-stressed to one half of their designed breaking strength for several hours. This is not only a thorough test of the quality of the material, but also produces a cable strand that will not stretch over the years due to use.

The stiffening girders carrying two 26-foot roadways are suspended from the main cables by 90 $\frac{1}{2}$ -inch diameter galvanized suspender ropes each having a breaking strength of 104 tons. They were also pre-stressed and fabricated to exact dimensions to fit their places in the structure without further work or adjustment.

American Steel and Wire Division is eminently fitted to handle important jobs like this. It has the engineering experience and complete manufacturing facilities to produce the finest bridge strand you can buy. Call or write for further information.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellent Preformed



UNITED STATES STEEL

GULF PRODUCTS



D'Addario Construction Company, Bridgeport, Conn., recently completed moving more than 1,500,000 cu. yds. of sand and gravel to prepare the site for one of the largest Helicopter plants in the U.S.—the branch plant of the Sikorsky Helicopter Division of United Aircraft Corp., near Stratford, Conn. Harris Structural Steel Company, Bridgeport, Conn., is erecting the buildings, which will cover 750,000 sq. ft. Both contractors used Gulf products exclusively on this big job.



and **FINE SERVICE**
keep equipment rolling
on helicopter plant project
— one of largest in the U.S.

Another important construction project where equipment is making an outstanding record of smooth, dependable performance with the help of Gulf quality petroleum products and all-round service on the job.

Here are some of the reasons why leading contractors like D'Addario Construction Company and Harris Structural Steel Company prefer to be served by Gulf: Gulf lubricants provide an extra margin of pro-

tection. Gulf fuels contribute to full power and top performance of equipment. Gulf supplies prompt delivery service and helpful petroleum engineering counsel.

Gulf products and fine service team up to help contractors reduce delays, cut maintenance costs!

Let us discuss with you how we can help you on your next job. Write, wire or phone your nearest Gulf office.

GULF OIL CORPORATION • GULF REFINING COMPANY
1833 Gulf Building, Pittsburgh 30, Pennsylvania



THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

It's Your Business . . .

Higher Equipment Prices and Rentals Alert Cost-Conscious Contractors

RIISING EQUIPMENT PRICES and higher rental rates are adding to contractors' need to watch cost closely during this booming construction year. These increases come on top of a faster rise in material prices, another round of substantial wage raises, and slow deliveries or shortages of equipment and materials.

Contractors who don't allow for these cost boosters may find their profit disappearing like a mirage. They should make sure they charge off current equipment to the job at rates sufficient to cover increased replacement costs.

The equipment price rise sneaked up on contractors. Prices began to creep slowly but steadily upward last December. Then in August they rose an average of 1%, the biggest month-to-month rise since July, 1953. This upward movement pushed the Construction Machinery Price Index reported by the Bureau of Labor Statistics to a record high of 136.0 in August. This means August prices were 36% more than they averaged during the three years 1947-49. It also means that prices have climbed 3.4% since August, 1954—a much faster rise than during the preceding 12 months when they went up less than 1%.

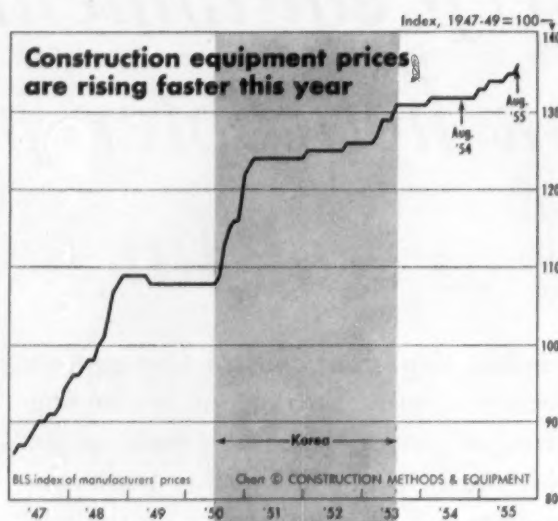
So far, the price rise varies widely according to the type of equipment. Sharpest increases among the types priced by the BLS for its index are: power cranes and shovels, up 6.7% over August 1954; portable air compressors, up 6.4%; and mixers and pavers, up 5.5%. Smaller increases came for scrapers and graders, which went up 1.7% and tractor prices which rose 1.6% (tractors led the moderate price rise during the 12 months ended August 1954 with a 1.8% increase).

Hand-held air tools is the only category reported by BLS in which prices are the same as last year. In fact, they haven't changed since June, 1953. Prices of machinery for mounting on tractors increased by a slight 0.7% since August 1954.

Rental Rates Rise Faster Than Prices

Construction equipment rental rates have increased much more than prices of new rigs since 1953. A compilation of prevailing rental rates (representing as nearly as could be determined an over-all average of rental rates throughout the U.S. for specific types of equipment) made by the Associated Equipment Distributors, Chicago, Ill., for informational purposes only, shows average 1955 rates for many items 10-25% higher than in 1953. This compares with an average 4.2% increase in manufacturers' prices for new equipment between August, 1953, and August, 1955, as measured by the BLS Price Index.

In the August *Construction Equipment News*, AED points out how much average rental rates have increased since 1953 for some types of equipment. For instance, cranes and shovels, 20 tons or less, average



Construction Equipment Price Indexes— 1947-49=100

Bureau of Labor Statistics Type of equipment	Index, August 15			Per cent change	
	1953	1954	1955	Aug '53- Aug '54	Aug '54- Aug '55
All types	130.5	131.5	136.0	+0.8	+3.4
Power cranes, shovels	129.0	130.6	139.3	+1.2	+6.7
Tractors	138.1	140.6	142.9	+1.8	+1.6
Scrapers and graders	129.4	129.4	131.6	0	+1.7
Mixers and pavers	123.3	121.6	128.3	-1.4	+5.5
Machinery, tractor mounted	133.2	133.9	134.8	+0.5	+0.7
Portable air compressors	124.8	125.6	133.6	+0.6	+6.4
Air tools, hand held	125.0	125.0	125.0	0	0

10% higher for gas and diesel types. Sizes over 20 tons show a 17-19% rise.

Rates for dragline excavators are up 10-20%. Rentals of $\frac{3}{4}$ -yd dragline buckets went up 25%, while sizes over $2\frac{1}{4}$ yd increased 11-14%.

For concrete highway finishing machines, rates rose 29% for 10- to 15-ft spreads and shot up 40% for the 20- to 25-ft spreads. Rates for crawler, self-propelled, gas-powered bituminous spreaders and finishers increased 12%, and diesel-type rates went up 24%. Average rates for paving mixers, crawler-type, are up 15-28% for gas and diesel. Smaller increases came in portable concrete-mixer rates, up 6-10% and in truck mixers or agitators, up 5%.

Rentals for pneumatic-tired, self-propelled, gas-powered graders are up 7-13%, and rates for diesel types increased 17-22%. For scrapers without power units, the average rental rate today is 15% higher than in 1953. Rates for road rollers, two- and three-

(Continued on page 31)



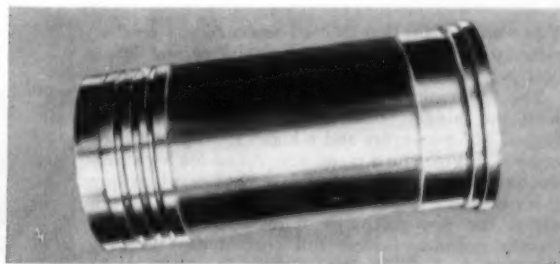
Chances are you'll never need to hook on a tank car to avoid down time. Chances are you *will* have to do something about cylinder liners at one time or other, though.

If you replace with a Caterpillar-built liner, you're sure of a liner made of a special nickel-molybdenum-chrome alloy that's tougher and stronger than steel, more resistant to heat and abrasion. You're sure of controlled induction hardening that makes bare surfaces highly resistant to wear, and of bores chemically treated for easier break-in—better seating of rings. You're sure of precision machining for smoothness, roundness and straightness the full length of the liner.

If you replace with a non-genuine liner, can you be sure of anything?

Better get Caterpillar parts every time.

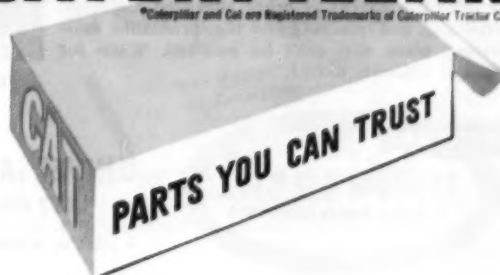
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.



This is a genuine CAT® cylinder liner. As many as 14 different inspections guarantee its composition, strength and hardness.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.



New 30"x26" Rolls

Greatest secondary crushing capacity ever offered in a plant of this weight

Giant Capacity

Gives you far more fine crushed material per hour. Has the ideal crusher for the big 4' x 12' screen

Universal 880 Senior "R"

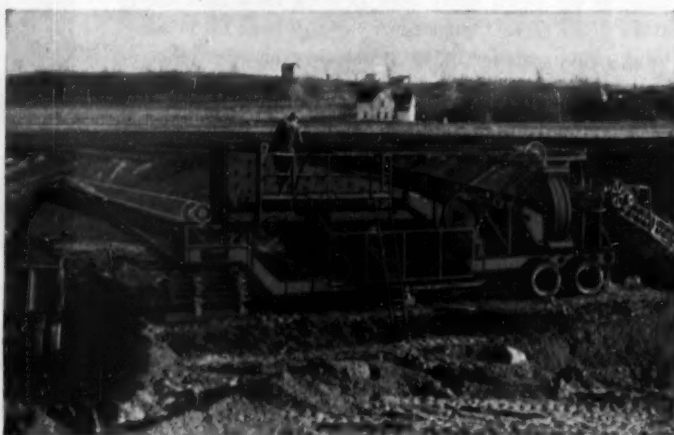
10" x 36" Jaw • 30" x 26" Roll Crusher • 30" Conveyors • 48 sq. ft. Screen

You want a plant that delivers screened and crushed material at a record rate and produces it at lower cost per ton. This is it!

The 880 Senior "R" teams a huge 48 sq. ft. screen with the biggest roll crusher ever offered, big, rugged 30" conveyors and a high capacity 1036 jaw crusher to give you a plant unequalled for high production in its weight class.

It's easy and economical to operate, too. You can adjust the jaw discharge quickly while standing on the ground—insures full control over primary crushing at all times. Dual clutch control on delivery conveyor speeds up truck loading of finished material. Plant operator or truck driver can control conveyor discharge.

Add to this—trouble-free V-belt drive, head-drive front delivery conveyor, extended operator's platform, plus the dozens of other advanced Universal features . . . and you've got a big, profitable, easy-operating plant that can't be matched. Write for illustrated bulletin, today!



Universal Senior 880 "R"—designed to meet highway weight limitations



UNIVERSAL ENGINEERING CORPORATION

327 8th Street, N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

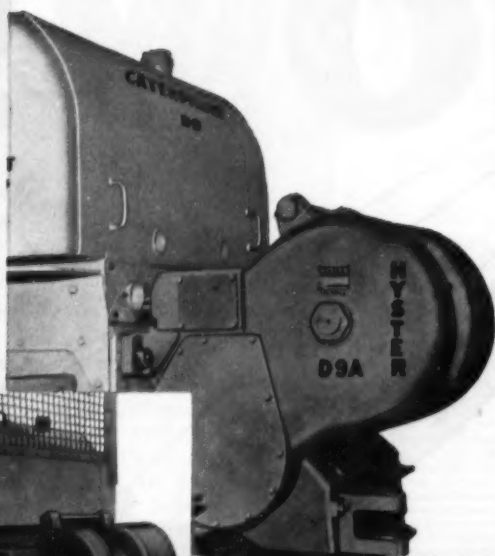
NEW

HYSTER®

WINCHES

for the new *Cat

D9 - D8 - D7 and D4 tractors



D9A TOWING WINCH



D8D TOWING WINCH



D7D TOWING WINCH



D4D TOWING WINCH

1

PERSONALIZED CONTROL MOUNTINGS

— New flexible cable control makes it easy to mount control lever bank in exact position most convenient for each operator. Flexible cable is threaded under tractor seat — completely protected from wear and damage. All control cranks and links are totally enclosed for maximum protection

2

SMOOTHER SHIFTING, LONGER GEAR LIFE

with new Hyster Constant-Mesh Transmission. Gear design with maximum tooth contact-ratio, assures positive action. All gears are case-hardened for longer life.

3

LARGE CAPACITY BRAKES

are designed to hold loads larger than can be moved by winch line. Cover plate can be quickly removed for easy external adjustment. Automatic Brake is optional equipment on all equipment.

4

BUILT IN DRAWBAR ON D9A, D8D

and D7D can be quickly changed from rigid to swiveling action by removing two lock plates. Drawbar shaft is precision fitted in bronze graphite bushings to insure long shaft life.

Completely redesigned for use in new *Cat diesel Tractors, these new Hyster winches will also mount on older model D8, D7 and D4 Tractors.

See your Caterpillar-Hyster Dealer or write direct to Hyster Company, 2921 N. E. Clackamas St., Portland 8, Oregon or 1821 North Adams St., Peoria 1, Illinois

HYSTER COMPANY



*Cat and Caterpillar are registered trademarks of the Caterpillar Tractor Co.

MARION 43.

Good Right Arm for Contractors who need to

GET SET NOW!

For
**Tough Jobs
Ahead!**



This MARION 43-M, on a basement excavation job in the northwest, carries $1\frac{1}{4}$ cu. yd. dragline bucket on 50-foot boom. Removable counterweight is power raised and lowered.

MARION

**MARION POWER SHOVEL
COMPANY**
MARION, OHIO, U. S. A.



POWER SHOVELS FROM $\frac{1}{8}$ TO 60 CUBIC YARDS • DRAGLINES • CLAMSHELLS • LOG LOADERS
PILE DRIVERS • WALKING DRAGLINES • CRANES, CRAWLER & RUBBER MOUNTED • BACKHOES

M

WHY-

GET SET NOW!

MORE TIME to (1) compare equipment (2) familiarize men with equipment before big jobs begin (3) work out financing details without delay (4) give new equipment its "shake-down" runs.

GREATER AVAILABILITY of (1) machines to choose from (2) erection men to assemble machine and train your men (3) front-end equipment to fit your needs exactly.

WHY-

43-M!

The MARION 43-M is today's outstanding 1 cu. yd. all-purpose heavy-duty machine. Many extra-value features. Carries 1½ cu. yd. shovel dipper in stockpiling. A 27-ton lifting crane. With tongue converter, serves as 1½ cu. yd. hoist, 1½ cu. yd. dragline. Ask your MARION Distributor for Bulletin 415 for 12 pages of pictures and facts about a machine designed and built for big production on the heavy-duty big jobs ahead.

USE THIS CHECK LIST TO GET SET NOW!

	Shovel (Cu. yds.)	Crane (tons)	Hoist (Cu. yds.)
MARION 32-M	¾	17½*	¾
MARION 43-M	1	27*	1-1½
MARION 362	1½	37	1½-2
MARION 372	—	43	—
MARION 83-M	2	60	2-2½
MARION 87-M	—	75	—
MARION 93-M	2½	80	—
MARION 101-M	3	84	—
MARION 111-M	4	169	—

*Rated at 10' in accordance with general practice

wheel, are 3-26% higher.

Rates for centrifugal, gas-driven pumps increased only 2%, but diesel-powered types are up 10%. Rates for jetting pumps, gas and diesel, have increased 10-20%.

In contrast to these increases, rental rates have been steady or have dropped for a few types of construction equipment. For example, air compressors, 60 cf and under, dropped 15%, and the rates for larger units remained unchanged. Portable air compressors, gas, 60 cf and under, show no change on the average, but sizes over 60 cf increased 5-9%.

The table below shows rental rates for certain types of equipment selected from the AED 1955, compilation. All rates are fob lessor's warehouse or shipping point, the lessee paying transportation costs to the destination and return.

Construction Equipment Rental Rates

Associated Equipment Distributors, Chicago, Ill.

Type of equipment	Per month	Per week	Per day	Type of equipment	Per month	Per week	Per day
Air compressors, portable:				Hoists:			
Gas, 35-125 cf, 100 psi	\$198.00	\$45.50	\$20.00	Air, 1500-2500 lb single dr	\$46.25	\$28.50	\$9.15
Gas, 125-185 cf, 100 psi	245.00	82.25	25.25	Air, 2500-3500 lb single dr	107.00	35.75	11.75
Gas, 185-250 cf, 100 psi	337.00	111.00	33.25	Chain, up to 1½ ton	20.00	6.80	2.15
Gas, 250-365 cf, 100 psi	455.00	149.50	45.25	Chain, 2½ to 4 ton	33.25	12.25	4.15
Diesel, 185-250 cf, 100 psi	422.00	139.75	43.50	Gas, single drum, 14-22 hp	81.00	27.00	8.90
Diesel, 250-365 cf, 100 psi	542.00	177.00	56.00	Gas, single drum, 29-42 hp	129.00	43.25	14.75
Diesel, 365-600 cf, 100 psi	861.00	286.00	90.25	Gas, double drum, up to 22 hp	106.00	36.75	11.25
Air tools:				Gas, double drum, 25-45 hp	185.00	58.00	17.00
Clay spades, incl. scoop	33.75	12.50	3.85	Elec, single drum, 17-27 hp	94.25	30.50	9.85
Drifters, medium	64.00	27.75	8.70	Elec, double drum, 17-27 hp	121.00	38.00	12.30
Hoists, 1501-2500 lb single dr	86.25	28.50	9.15	Elec, three drum, 47-57 hp	275.00	90.50	29.85
Hoists, 2501-3500 lb single dr	107.00	35.75	11.75	Finishing machines:			
Hoists, ½ in. per 80 ft length	8.35	3.65	1.60	Bituminous machines, crawler, self-powered, diesel	1,638.00	579.00	148.00
Pavement breakers, 1-65 lb	42.75	15.00	4.65	Cone floor, powered, 30-36" d	87.00	29.50	9.50
Pavement breakers, 70-95 lb	46.75	16.25	5.10	Cone highway finisher, 10-15'	837.00	263.00	79.00
Rotating rock drill, 1-50 lb	42.75	15.00	4.65	Pile hammers:			
Rotating rock drill, 61-65 lb	47.00	16.25	5.25	McKernan-Terry S-3	312.00	103.00	33.35
Rotating rock drill, 66-80 lb	52.50	17.75	5.65	McKernan-Terry del-actg /1	80.50	26.00	8.95
Tampers, single	33.00	12.25	3.85	del actg 98 2 or 3	328.00	106.00	35.00
Vibrators, pneu pwr flexible, 20-35 lb	58.00	19.00	6.10	Vulcan, single acting /1	415.00	135.00	43.00
35-50 lb	64.50	21.25	7.15	Vulcan, double acting /50C	562.00	187.00	58.65
Wagon drill, with air hoist, medium	219.00	70.50	23.00	Mixers, concrete:			
heavy	248.00	81.25	27.25	Tilting dr, low chrg 9-3½ cf	60.75	21.25	6.95
Boilers: Vertical, 20-25 hp				Non-fitting drum:			
Vertical, 50-60 hp	145.00	48.25	15.75	low charger 3½-6½ cf	81.25	28.00	9.00
Horizontal, 55-70 hp	204.00	67.00	21.75	power charger, 3½-6½ cf	165.00	54.75	17.75
Horizontal, 90-125 hp	358.00	118.25	38.15	power charger, 10½-12 cf	183.00	64.25	21.40
Buckets: Clamshell, ½ cy				Paver, /34-E, single drum	2,308.00	737.00	234.65
Clamshell, ¾ cy	134.00	44.75	14.50	Pumpcrete, cone pump, ramix:			
Clamshell, 1½ cy	304.00	67.00	21.75	Gas, Mod. 160 single cyl	776.00	264.00	81.30
Concrete, bottom dump, 1 cy	56.50	19.50	6.85	Gas, Mod. 200 double cyl	1,982.00	645.00	201.60
Concrete, bottom dump, 2 cy	92.50	28.75	9.55	Elec, Mod. 160 single cyl	856.00	281.00	87.30
Dragline, 1 cy	116.00	38.75	12.25	Elec, Mod. 200 double cyl	2,185.00	694.00	214.35
Dragline, 1½ cy	148.00	48.75	15.50	Pumps:			
Dragline, 2 cy	177.00	58.00	18.75	Centrifugal, gas 2" 7-10M	55.75	19.25	6.20
Concrete cars, power driven:				Centrifugal, gas 2" 15-20M	70.25	24.25	7.85
Manually guided	82.25	29.75	8.95	Centrifugal, gas 4" 20-40M	107.00	36.50	11.75
Carriers operator	121.00	41.00	12.25	Centrifugal, diesel 6" 60M	258.00	83.25	26.50
Cranes, cap at ft radius:				Diaphragm, force or open, 3" single	58.00	20.75	6.90
Crawler, gas 5-6½ ton, 10'	681.00	214.00	71.25	4" single	67.75	22.60	7.50
7½-8½ ton at 12'	686.00	287.00	95.75	Rollers:			
24½-33½ ton at 12'	1,612.00	520.00	171.00	2-wheel tandem, 3½-5 ton gas	202.00	68.00	22.25
Crawler, diesel				2-wheel tandem, 12-15 ton gas	552.00	178.00	56.00
5-7 ton at 10'	760.00	238.00	78.75	2-wheel, 7½-9 ton gas	438.00	140.00	45.75
7½-8½ ton at 12'	972.00	311.00	104.00	2-wheel tand, 9-9½ ton diesel	475.00	152.00	47.00
24½-33½ ton at 12'	1,915.00	615.00	200.00	3-wheel, 7½-9 ton diesel	494.00	166.00	52.50
Truck mounted, gas				Steam, compaction, towed	148.00	50.50	15.00
5-7 ton 10'	913.00	285.00	90.00	4 wheels front, 7 rear	167.00	57.25	17.75
17½-20 ton at 10'	2,183.00	699.00	210.00	Steam, compaction self-propel	458.00	156.50	49.50
30-35 ton at 10'	3,999.00	1,304.00	432.00	4 wheels front, 5 rear	458.00	156.50	49.50
Dragline excavators:				Rollers, sheepfoot, double dr:			
Crawler mounted, gas ¾ cy	1,067.00	351.00	111.00	42" diam, 48" length	160.00	57.50	16.75
Crawler mounted, gas 1½ cy	1,905.00	605.00	198.00	60" diam, 60" length	374.00	130.00	41.50
Crawler mounted, diesel ¾ cy	1,216.00	392.00	127.00	(Continued on page 207)			
Crawler mounted, diesel 1½ cy	2,207.00	702.00	233.00				
Truck mounted, gas ¾ cy	2,175.00	672.00	211.00				
Truck mounted, diesel ¾ cy	2,319.00	722.00	231.00				



One Man Drives 1600 Form Pins a Day!


Again Le Roi Tractair's portable air-power
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When you're driving form pins at the rate of 200 an hour, you're saving money. And that's exactly what the Tractair unit is designed to do. Here's how:

Tractair is a combination 42-hp wheel tractor and 125 cfm compressor. This means it is extremely mobile—takes air-power almost anywhere you need it. It can do a lot of things for you — drill rock, tamp fill, break concrete, vi-

brate concrete. It can be fitted with attachments, too, so that you can load, backfill, sweep, and plow.

Yes, the Tractair unit can do 101 odd jobs for you, save you money on all of them, and you don't have to tie up trucks or men to use it. So write for our latest literature and find out how the versatility of Le Roi Tractair can help you cut costs on a wide variety of jobs.

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PORTABLE AIR COMPRESSOR



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T-35



Exclusive "ZEREX" Analyzer helps you CUT ANTI-FREEZE COSTS up to 50%

After years of research, Du Pont has developed a "Zerex" Anti-Freeze Analyzer Kit that you can use *right on the job*—to tell how much reserve alkalinity (protection against corrosion) remains in a used "Zerex" solution!

By telling you which solutions you can safely continue to use—and which ones should be replaced—the Analyzer can reduce your cooling-system maintenance expense and cut your anti-freeze costs as much as 50%.

The Analyzer can also become the core of a cost-cutting preventive maintenance program. By telling you which anti-freeze solutions are worn out and should be replaced with a fresh "Zerex" solution, the Analyzer

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Just add these savings to those already possible by pre-mixing "Zerex" and you know why "Zerex" is your best anti-freeze buy—bar none! And remember, only "Zerex" can be safely analyzed on the job with Du Pont's exclusive Analyzer.

SPECIAL OFFER

We will demonstrate the cost-cutting features of the "Zerex" Analyzer—at no obligation. Just fill out and mail the coupon below.

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Look at Reo, like

These Buffalo Bulk Cement Haulers looked and bought—



they did in Buffalo

here's what they say:



Left to right: Gene Schwartz, Oscar Wohlhueter, August Deuchlar, owners of Concrete Delivery Co., Inc., Lackawanna, New York. Oscar Wohlhueter, President, states—“These Reo Model A-603s powered by your V-8 220 H.P. engine are the finest we have ever owned . . . remarkable performance and economy. Our drivers report the V-8 goes up grades in 1 to 1½ higher gears than any they have driven.”



E. F. Carlson, President, Carlson Truck Service, Inc., Buffalo, says—“Ours is one of the toughest kinds of trucking there is, stop and go, short hauls with heavy loads up to 40,000 pounds.

We have been using Reos since 1952 and our first units have acquired over 100,000 miles without a major overhaul. Our records show conclusively that Reo Tractors are a major factor in holding down our cost per mile.”



Robert C. Schutt, Jr., President, Schutt, Jr., Inc., Buffalo, reports—“We are very pleased with the performance of our Model A703 Reo powered by your 220 H.P. V-8. Average fuel mileage is 5.25 M.P.G.

Anthony Palmer is one of our drivers. He says he is amazed at the driver comfort, the maneuverability and the power-plus that this Reo has.”

and your next truck will be REO, too!

REO has the most complete advanced line of heavy- and medium-duty truck engines available today—with both short stroke design and revolutionary wet-sleeve construction. Choice of V-8s or sixes, gas or LPG. Pound for pound Reo Gold Comet V-8s are the most powerful heavy-duty truck engines ever built, actually delivering a startling 1½ h.p. per cu. in. displacement—as much as 35% above the industry average.

REO features the conventional type “full comfort” cab in its entire V-8 line. Only 96" (front-of-bumper-to-back-of-cab), it permits hauling of 35' square nose trailer within 45' overall.

REO designs its own engines and backs every one it builds with a 100,000 Mile or 1 Year Warranty, whether in new Reo Trucks or for replacement in other makes. No other manufacturer gives you such positive assurance of outstanding performance.

REO knocks out high overhaul costs and downtime loss with built-in engine features, like wet-sleeve construction, that permit complete overhaul in as few as 15 hours. Complete overhaul kits cost as little as \$169.47 (list).

REO builds trucks that are “commodity engineered” at the factory to meet your specific needs, thereby assuring you of lowest possible cost of operation . . . trucks built for truckers by truck specialists.

LOOK AT REO! Ride in one—drive one—an amazing “new concept” in live-wire, big truck performance awaits your discovery. Look under “R” in your telephone book and call your Reo branch or distributor today.

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Faithful, economical performance of Diesels equipped with American Bosch Fuel Injection Systems is backed by a world-wide fuel injection service organization . . . staffed with factory-trained technicians . . . using the latest and most efficient methods . . . working with highly specialized equipment designed and built to American Bosch exacting standards.

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saves time and money for owners of American Bosch-equipped Diesels. Cost-conscious operators appreciate American Bosch standards that assure them dependable performance and convenient facilities for prompt, reliable servicing.

To find the name of the authorized American Bosch fuel injection service station nearest you in the U.S.A. and Canada, check the directory below:

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Tucson	Auto Plane Electrical Service 1037 South 6th Ave.
Yuma	Yuma Automotive Electric 229 8th St.
ARKANSAS	
N. Little Rock	Womack Bros. & Taylor 1219 E. Broadway
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Brooklyn	A & D Diesel Service, Inc. 145 — 21st St.
Buffalo, 8	Hettrich Electric Service 1032 Ellicott St.
Hempstead, L. I.	A & D Diesel Service, Inc. 887 Nassau Rd.
Peiham Manor	Correll-Gross, Inc. 44 Secor Lane
Rochester	Union Carburetor & Injection Service 6 Pitkin St.
Troy	Ehrlich Electric Service, Inc. 200 Fourth St.
Utica	Stiefvater Electric Co., Inc. 320-322 Lafayette St.
Woodside, 77	American Bosch Div. American Bosch Arma Corp. 34-21 56th St.
NORTH CAROLINA	
Charlotte	Carolina Rim & Wheel Co. 301 East 8th St.
Raleigh	Diesel Injection Sales & Service 3015 Hillsboro Road
NORTH DAKOTA	
Fargo	Northwestern Diesel Service Co. 2800 Front St.
Minot	Diesel Service Company 1521 2nd St., S.W.
Williston	Crighton Motor Co. 223 E. Broadway
OHIO	
Akron	Standard Motor Parts 200 Carroll St.
Cincinnati	Tri-State Distributing Corp. Broadway at Eighth
Cleveland, 14	The Cleveland Ignition Co. 1301 Superior Ave.
Columbus, 18	Columbus Ignition Co. 211 Neilston St.
Lisbon	Lisbon Diesel & Supply Co., Inc. 234 East Washington St.
OKLAHOMA	
Oklahoma City, 2	American Electric Ignition Co. 124 N. W. 8th St.
Tulsa	Magneto Ignition Company 701 West 5th St.
OREGON	
Klamath Falls	Specialized Service Co. 1434 Main St.
Pendleton	Eds Magneto & Diesel Co. S. W. 18th & Court St.
Portland, 14	Automotive Products, Inc. 1700 Southeast Grand Ave.
Roseburg	Diesel Injection Service 2145 N. Stevens
PENNSYLVANIA	
Harrisburg	Penn Diesel Service Co. 100 Prince St.
Hazleton	Penn Diesel Service Co. 27th & N. Church Sts.
Mt. Carmel	Gengler's Diesel Service & Sales 2nd & Orange Sts.
Philadelphia	North American Diesel Injection Co. 2523 No. Howard St.
Philadelphia	Sullivan Brothers 1718 Fairmount Ave.
Phillipsburg	Keystone Diesel Inj. Service Phillipsburg-Clearfield Hgw.
Pittsburgh, 6	Automotive Ignition Co., Inc. 6358-6364 Penn. Ave.
SOUTH CAROLINA	
Charleston	Diesel Fuel Injection Service 208 Savannah Hgw., P. O. Box 512
Columbia	Boney Diesel Works Co., Inc. Leesburg Road
SOUTH DAKOTA	
Leimon	Josund Auto Electric 15 First Ave.
Rapid City	Hoseth Auto Electric 324 St. Joseph St.
Sioux Falls	Reinhard Brothers Company 225 E. 11th St.
TENNESSEE	
Knoxville, 15	Diesel-Magneto Service Co. 1423 Island Home Ave.
Memphis, 4	Automotive Elec. Service Co. 982 Linden Ave.
Nashville	Precision Parts Corp. 400 N. First St.
TEXAS	
Dallas, 1	Beard & Stone Electric Co., Inc. 3909 Live Oak St.
El Paso	Reynolds Batt. & Mag. Co. 801 Myrtle Ave.
Houston, 1	Beard & Stone Electric Co., Inc. 805 Polk Ave., P. O. Box 1717
Houston	Diesel Pump & Injector Service 6832½ Navigation Blvd.
Houston	Magneto & Diesel Injector Service 6931 Navigation Blvd.
Odessa	Electric Service & Supply P. O. Box 1417
Pampa	Radcliff Bros. Elec. Co. 519 S. Cuyler St.
San Antonio	S. X. Callahan 425 N. Flores St.
San Antonio	Wornack Bros. 123 Carolina St.
UTAH	
Salt Lake City	Diesel Electric Service & Supply Co. 60 East 13th Street
Salt Lake City	Midwest Service & Supply Co. 1333 S. Main St.
VIRGINIA	
Norfolk	Diesel Injection Sales and Service 808 Union St.
Richmond	C. H. Woodward Electric Co., Inc. 709 W. Broad St.
Salom	Diesel Injection Sales & Service 814 E. 8th St.
WASHINGTON	
Seattle	Seattle Injector & Electric Co. 2706 Second Ave.
Spokane	Spokane Diesel & Electric Co. 704 E. Pacific Ave.
Spokane	Sunset Electric Co. North 703 Division St.
Walla Walla	Walla Walla Motor Supply, Inc. 128 E. Alder St.
Yakima	Diesel & Electric Service Co. 1506 So. First St.
WEST VIRGINIA	
Charleston	Mountain Service 6414 McCorkle Ave.
WISCONSIN	
Milwaukee, 2	Wisconsin Magneto Company 918 N. Broadway
WYOMING	
Casper	Cotter Battery & Electric Company 402 E. 2nd St.
ALASKA	
Anchorage	Automotive Diesel Electric Supply & Overhaul 2424 E. 5th Ave.
Juneau	Van's Diesel Service 199 2nd Ave.
CANADA	
Calgary	Hutton's, Ltd. 131 — 11th Ave., W.
Edmonton	Smith Battery & Auto Electric 10125 — 105th St.
Fredericton	Stairs Bros. Fuel Injection Service Station 493 Northumberland St.
London	Universal Ignition & Battery Ltd. 324 York St.
Montreal	International Electric Co., Ltd. 1037 Bleury St.
Montreal	Northam Equipment, Ltd. 4135 Rozen St.
Quebec	Quebec Gas & Diesel Engines, Ltd. 145-147 rue Prince Edouard
Regina	Electric Motor Service 1734 Broad St.
St. John's (Newfoundland)	A. H. Murray & Co., Ltd. 114-116 Ave. A, North
Saskatoon	Lambert Electric, Ltd. 6 Spadina Ave.
Toronto	A. Cross & Co., Ltd. 1009 Bay St.
Toronto	Auto Electric Service Co., Ltd. 627 Biddell St.
Vancouver	Fred Holmes Fuel Inj. Sales & Service Ltd. 775 Homer St.
Vancouver	Jeffree & Jeffree, Ltd. 1955 Columbia St.
Vancouver	MacFarlane & Co., Ltd. 1660 Station St.
Vancouver	Vivian Diesels & Munitions, Ltd. 237-241 Fort St.
Winnipeg	Brown & Murray, Ltd. 237-241 Fort St.
HAWAII	
Honolulu	Honolulu Iron Works Company 28 No. Queen St.
Honolulu	Todoki Machine & Marine Works 810 Halekauwila St.
PUERTO RICO	
San Juan	General Farm Equipment Co. 742 Las Palmas Ave., Stop 12, Miramar

(List of foreign service stations available on request)



Poised for the Dive

STRING OF PIPE stands ready to be welded into the first petroleum products pipeline in Canada's western provinces. The 6-mi pipeline dives under Burrard Inlet at Vancouver, B.C., to link the loco refinery of Imperial Oil Ltd., of Canada, to a new oil marketing terminal near Burnaby. Marine Pipe Line and Dredging Ltd. of Vancouver laid the 4,000-

ft underwater section in only two days. Construction crews welded the 6-in dia pipe in strings 170 ft long, then moved the strings down to a ramp on shore for launching. A barge dug a ditch across the inlet under 55 ft of water, pulled the pipe across, and filled in the ditch. Frogmen inspected the line before it was covered.

Announcing the Zephyrcranes

A NEW complete line of advanced-design Truck-Cranes

The new Link-Belt Speeder line of truck-mounted Zephyrcranes features Speed-o-Matic — the true power-hydraulic control system. Fingertip-operated, it provides fast, easy, positive response, perfect "feel" for speed with accuracy. And because it greatly reduces operator fatigue, keeps him alert . . . you increase safety, and your operator is able to maintain greater output with less effort.

Check these features

- **REVERSING CLUTCHES** are available for either or both main drums . . . provide power load lowering of main hoist line and jib whip line.
- **THIRD DRUM** available for HC-88, 98, 108 is particularly valuable for piledriving applications.
- **ALL CLUTCHES ARE INTERCHANGEABLE** (within each model) with exception of front drum reversing clutch on the HC-58 and HC-68.
- **HIGH-SPEED, INDEPENDENT BOOMHOIST** with power raising and power controlled lowering through Speed-o-Matic boomhoist and lowering clutches is standard on HC-88, HC-98 and HC-108. Available for the HC-58 and HC-68.
- **PATENTED RETRACTABLE HIGH GANTRY** is quickly raised or lowered under power. In raised position, it reduces stresses on boom and boomhoist cable. Standard except on HC-58 and HC-68.
- **FULLY CONVERTIBLE** to standard attachments.
- **REMOVABLE REAR OUTRIGGER ASSEMBLY** permits easy, quick changeover for shovel, hoe or dragline operation.
- **COUNTERWEIGHT REMOVAL DEVICE** using Speed-o-Matic hydraulic jacks, speeds removal and installation of counterweight. Available on HC-88, HC-98 and HC-108 models only.
- **HYDRAULICALLY CONTROLLED SWING BRAKE** is standard on HC-88, HC-98 and HC-108.
- **SCREW-TYPE OUTRIGGER JACKS AND PONTOONS** available.
- **TORQUE CONVERTER** power units available.

For details, contact your distributor or write
LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa

LINK-BELT SPEEDER

*Builders of a complete line of crawler
and rubber-tired shovel-cranes*

12-089



HC-98 Zephyrcrane with 80' boom and 20' jib works quickly, spots loads gently, accurately. Operator has clear, up-front visibility.

Five models 12½ to 35-ton capacities
with true power-hydraulic control

HC-58	HC-68	HC-88	HC-98	HC-108
12½-ton	17½-ton	25-ton	30-ton	35-ton

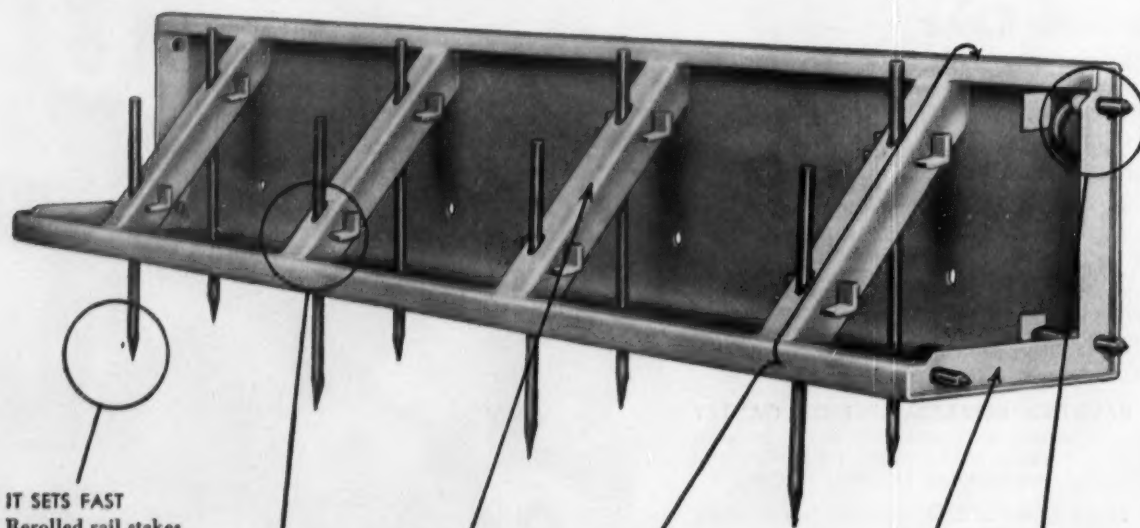
Remote control
available.

FROM STEEL FORM

A Great New Dual Duty

Here it is! The last word in dual purpose forms—the all-new Heltzel Dual Duty that is stronger, faster aligning, easier to strip. Designing around the suggestions of dozens of contractors we have de-

veloped a form superior in every way to anything on the market. Initial reports from several jobs in different sections of the nation bear out our contention—it is the best yet.



IT SETS FAST

Rerolled rail stakes with long points that will penetrate rock where necessary.

DOUBLE STRENGTH CHANNEL SECTIONS

Not just stake pockets, but real points of support. By using channel sections form strength is doubled.

EXTRA WIDE TRACK

Full track with generous flange securely welded to channel sections.

DOWEL LOCK FOR FASTER ALIGNING

Pointed dowels at all three corners quickly give form setter perfect alignment. It can't fail!

LOCKED-IN ANGLE WEDGES

Wedges of angle steel for greater strength. Upturned end retainers keep wedges in channel.

FULL SUPPORT ON EACH END

L-section at each end of form keeps face and base at true right angle, also supports tread—prevents form damage where it most often occurs.



For Your File

Two handy form booklets from which you will be able to select the exact form for any job need. Write today for your copies of K-19 and L-20.

★ Where specifications demand face and base of equal dimensions, Heltzel can furnish single purpose forms of same basic design.

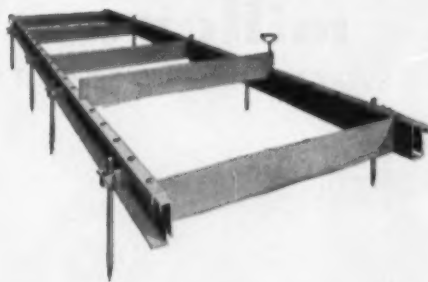
HEADQUARTERS Plus Improved Standards

SUPERIOR ROAD FORMS



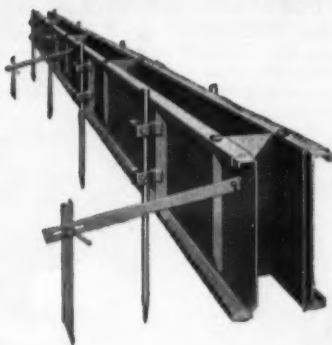
The original superior road form. Hundreds of miles of this form are in daily use throughout the nation. Available with or without flange in sizes to suit customer requirements.

SIDEWALK FORMS



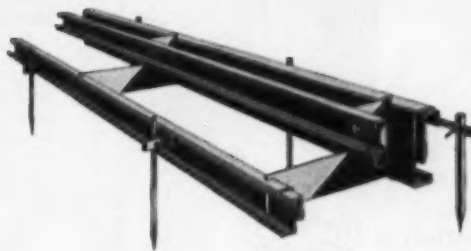
The favorites of more contractors than any sidewalk form. Sturdy, built for years of wear—they go down fast and strip easy. Rerolled rail stakes with adjustable wedge pockets.

CURB FORMS



A complete line of curb forms for every style and size. Give us your job dimensions and we'll suggest the form to suit exact requirements.

CURB AND GUTTER FORMS



Here's the finest curb and gutter form made today. A single base set of Helco curb and gutter forms can be made to conform to just about any curb and gutter style known. The one real all-purpose unit.

• OTHERS INCLUDE ISLAND FORMS, PILE FORMS, RIGID AND FLEXIBLE RADIUS FORMS, FOUNDATION FORMS

HELTZEL



STEEL FORMS

THE HELTZEL STEEL FORM & IRON COMPANY
51000 Thomas Road • Warren, Ohio

NO SINGLE WELDER WILL DO IT ALL!

THERE'S EXACTLY
THE RIGHT **millers** WELDER
TO MEET EVERY WELDING REQUIREMENT

MILLER SR RECTIFIER TYPE DC ARC WELDERS

Available in 200, 300, 400 and 600 amperes, it is a superior direct current welder using Miller Unitran transformer control and selenium rectifiers for conversion from 3 phase AC line current. Miller SR Welders feature widest possible current range, extreme arc flexibility, maximum electrode deposition rate and highest electrical efficiency.



THE *New* MILLER SRH RECTIFIER TYPE DC ARC WELDER

A new concept in welder design for all DC metallic arc welding. Available in 200, 300 and 400 amperes. It is ruggedly constructed, compact, and is designed to lend itself to stacking for parallel operation or to conserve floor space. It has single range control and is weatherproof.



MILLER ARC WELDERS FOR TUNGSTEN ARC WELDING PROCESS

These Miller Welders feature the patented Miller UNITRAN control circuit which combines the transformer with its own integral flux diverter. This, in conjunction with adequate open circuit voltage, high frequency, balancing resistor and optional controls insures superior uniformity and flexibility throughout the entire welding range. Available in nine models.



THE *New* MILLER **MULTI-ARC** COMBINATION AC-DC WELDER

Available in 14 models, this new Miller Welder provides both AC and DC welding power for applications where both are required. It operates from a single phase power line and is available with high frequency and controls designed especially for inert gas arc and spot welding.



Write today for complete information
on these Miller Welders.



millers

ELECTRIC MANUFACTURING CO., INC.
P.O. Box 798 Appleton, Wisconsin

MILLER 100 SERIES HEAVY DUTY INDUSTRIAL TYPE AC WELDERS

Designed for heavy production welding and automatic welding applications. Available in eight models. The 100 Series Welders permit faster welding—as much as 35% faster. Movable coil design and 80 volts O.C.V. produces uniform and better welding characteristics throughout the entire range of the welder.

"...if it's MILLER you know it's the finest..."

Construction News in Pictures...



DELICATE OPERATION — Derrick mounted on pontoons 60 ft long moves into position to set a deck section of a new bridge across the Pend Oreille River in Idaho. The reinforced concrete span is 35 ft long and weighs 70 tons. LeBoeuf-Dougherty

Contracting Co. and Peter Kiewit Sons' Co., the joint-venture contractors, placed a total of 154 spans this length and 25 spans 17 ft long by this method. The 5,897-ft bridge will be completed and opened to traffic late this year.

→ **SNUG QUARTERS**—When Arctic winds howl, construction workers will sleep warm in this barracks barge. J. A. Jones Construction Co. of Seattle, Wash., had the barge built and towed 1,200 mi to Sittkinak Island, off the Alaskan coast, where the firm is working on a \$4 million military installation. Use of the insulated, well-heated barge in place of quarters on shore will make it possible to work longer into the winter. In addition to living space, it contains the contractor's offices.



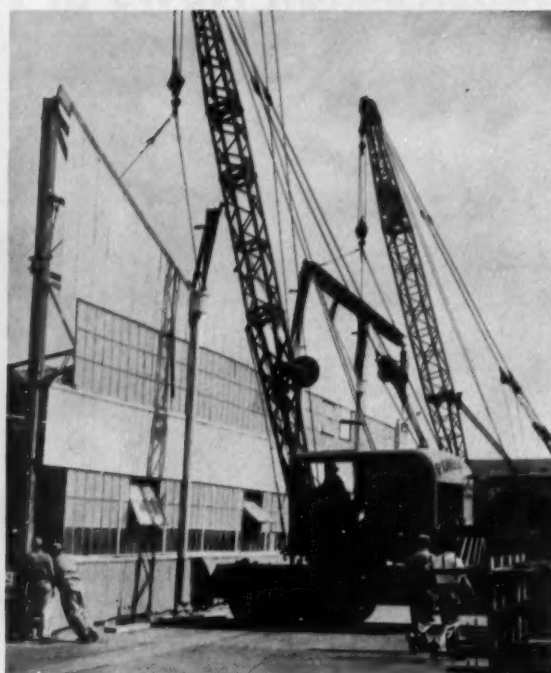
← **RESCUE TEAM** — A check of test core drillings at Oahe Dam in South Dakota showed that methane gas had leaked into some of the holes through which flood control tunnels must pass. So Mittry Constructors of Los Angeles, the tunnel contractor, installed a methane alarm on its tunneling machine and equipped a rescue squad with McCaa masks for emergency action. The methane alarm flashes a red light when gas in the air reaches a dangerous level. It was supplied by Mine Safety Appliances Co., Pittsburgh.

(More photos on next page)

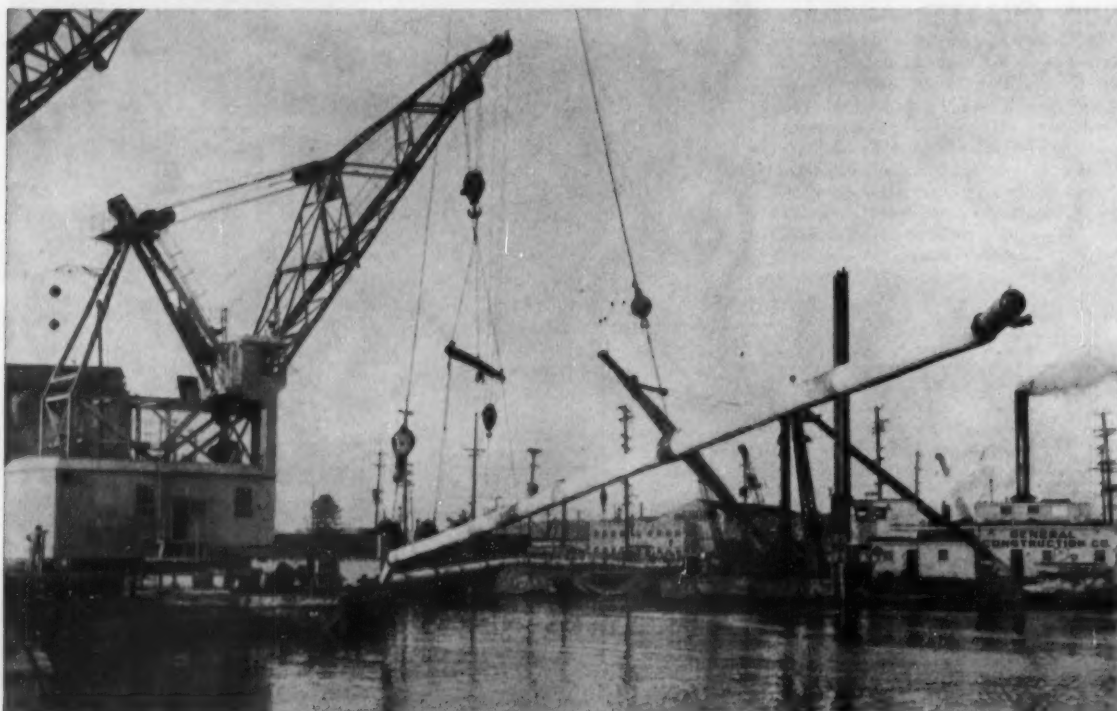
Construction News in Pictures . . . Continued



GOOD TRICK — Clearance under a viaduct over New York City's Major Deegan Expressway was too low for paving machines to work. So Slattery Rock Corp., Bronx, N. Y., used two Michigan tractor shovels as concrete buggies to pour under the viaduct.



ROOM FOR EXPANSION — Two motor cranes pick up a wall and move it out 50 ft to provide additional space in Ryan Aeronautical Co.'s plant in San Diego, Calif. Cranes steady the wall until side walls and roof are extended to meet it.



FAST WORK — Seattle homes soon will get natural gas through a transmission main under the city's West Waterway. Engineers Limited Pipeline Co. put the new main down for Seattle Gas Co. in about 5 hr. Three floating cranes, operated by General

Construction Co., and three truck cranes picked up the 500-ft section of pipe and lowered it to a trench 14 ft deep in the channel bottom. The section is composed of 40-ft lengths of 12-in. pipe welded together. It weighs 45 tons.



New **HOMELITE** Pump *Whispers While It Works*

Goodbye residential complaints! Here's a new lightweight gasoline engine driven pump that takes it easy on the neighbors' ears. Yet handles any water problem . . . from seepage to volumn pumping! The new Homelite Model 36 S2 2" self priming centrifugal Pump operates at slow speed with low noise level yet has high capacity of 9000 gallons per hour. It weighs only 85

pounds and can be easily carried by one man to the best pumping location. Starts quickly, primes automatically, gives long, dependable and trouble-free service under the toughest conditions. Ask your Homelite Representative for a free demonstration. You'll find a good neighbor policy in every pump.

*Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws*

HOMELITE
CORPORATION

A Textron American Company
1010 RIVERDALE AVENUE • PORT CHESTER, N. Y.

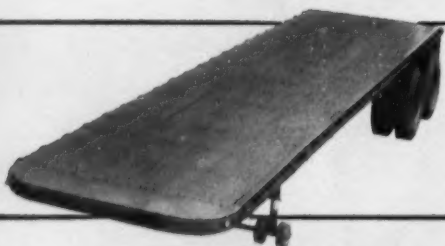
Canadian Distributors: Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Ottawa



New Trailmobile Dump Trailer...

tandem axle, 25 ton capacity. Rugged "workhorse" on toughest jobs! Hi-tensile steel body has light weight . . . tremendous strength. Tailgate opens top or bottom. 3-stage hoist mounted to push directly under load. Also built with single axle, 15 ton capacity! Power Fifth Wheel available when you require pump and tank on trailer.

Ease the squeeze on profits with cost-cutting



TRAILMOBILE PLATFORM TRAILERS with famous Trailmobile Tandem give years of low-cost hauling! Handle maximum loads of lumber, pipe, sheet metal, "I" beams. Main frame rails are full 15" deep for extra load-carrying strength! "Cantilever" outriggers supported by cross-members every 18" for still greater ruggedness! Also available as a two- or four-wheeler flat, without tandem!

TRAILMOBILE ASPHALT TANKS feature advanced design, rugged, hi-tensile steel construction, big capacity. Depend on them for extra years of troublefree service and a higher price at resale time.



Illustrated —

TRAILMOBILE LOW BED TRAILER MODEL FR

hauls really back-breaking loads with ease! Electrically-welded throughout for extra strength and long life! Models available with trunnion axle assemblies, enclosed rocker beams, level or drop platforms. Capacities from 15 to 35 tons!



TRAILMOBILE HEAVY-DUTY LOW BED TRAILER MODEL FC

When you've got to move shovels, road rollers, machinery and other equipment up to 75 tons, you need a Model FC Trailmobile trailer! Built rugged with best quality steel and other materials, electrically welded throughout, keeps upkeep costs low! Capacities from 45 to 75 tons!



TRAILMOBILE BULK COMMODITIES TRAILER

handles any and all materials that will flow . . . asphalt, core sand, aggregate and other bulk commodities. Fibre-glass insulation provides high insulating efficiency, saves weight.

NEW, LIGHTWEIGHT OPEN TOP IP (INTEGRAL POST) VAN combines all-steel construction, strength and light weight! New IP (Integral Post) construction features integral posts on 12" centers . . . only 7" apart! This lets you haul bulky, concentrated loads with ease! Open top construction allows for crane-loading!





Trailmobile SC Bulk Cement Trailers

eliminate bags, barrels, storage and rehandling . . . saved one user \$177 on each load (37½¢ per bag)! Speeds handling . . . unloads 118 barrels of dry cement in 15 minutes! The Trailmobile's lighter weight means lower operating costs, additional payloads.

TRAILMOBILES

**... Engineered to Outwork and Outlast
them all ... a finance plan to suit your needs!**

It's great to be low bidder—if there's still room for a profit! So when you figure jobs, figure all the ways a Trailmobile trailer can help you cut costs . . . save man-hours . . . bring the job in on time!

Trailmobile Trailers cut down-time to the bone. They're built with brawn and muscle to take all the abuse you can give them! And they're always in demand in the used equipment market, too—con-

tractors everywhere know them to be reliable and efficient no matter how rough the job turns out to be.

Whatever your hauling requirements, there's a rugged Trailmobile *right and ready* for you! See the yellow pages of your local phone directory for the location of your nearest Trailmobile branch office and able assistance in solving your hauling problems! Or, write us direct . . . use coupon below.

TRAILMOBILE USED TRAILERS For Every Purpose!

Many contractors use Trailmobile Van Type Trailers as mobile or permanent field offices, drafting rooms, payroll and watchmen's shacks. Also for tool and equipment storage, transportation of heavy equipment from site-to-site, sleeping quarters, and many other uses! Low in cost, these used Trailmobile Trailers quickly pay for themselves in the time and money they save on shanty construction and erection at each new site!

Other top-value Trailmobile used trailers include:

TANKS . . . for water, gasoline, oil, asphalt, bulk cement storage and transporting.

FLATS . . . to hold and haul air compressors, pipes, lumber, poles, bulky machinery, digging equipment.

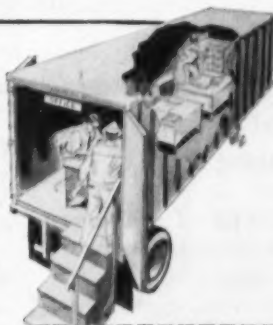
DUMPS . . . for hauling up to 25 tons per load.
All sizes . . . lengths . . . and types available!

TRAILMOBILE INC.

*The Trend
is to* **TRAILMOBILE**

Cincinnati 9, Ohio

Berkeley 10, California



*Friendly Trailmobile Branch
Offices Throughout The
U. S. To Assist You With Your
Hauling Problems! Mail
Coupon For Further Information!*

TRAILMOBILE INC., Cincinnati 9, Ohio

Please rush literature on following type trailers:

_____ BULK COMMODITIES _____ VANS _____ DUMPS
_____ OPEN TOPS _____ PLATFORMS _____ LOW BEDS
_____ ASPHALT TANKS

☐ Send us more information on _____ type used trailers.
☐ Please have your representative call without obligation.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____



Most Modern Design! Most Modern Power!

Get both in new Chevrolet Task-Force trucks. Modern styling that actually works for you! Modern power in the shortest stroke V8's* in any leading truck!

Styling that's designed to make money for you—It's a fact. The ultra-modern, Powermatic design of a new Chevrolet Task-Force truck calls attention to your business, favorably impresses customers and prospective customers! That's why on looks alone a Task-Force truck can make money for you. And it's *functional* styling. Panoramic windshield, new High-Level ventilation, concealed Safety Steps—these are styling features that double in brass to make the driver's job less of a chore. With safety and comfort increased, efficiency goes up. Tight schedules

are easier to maintain and you keep the profits coming in on time.

V8 power—unmatched for efficiency!—Chevrolet brings you the industry's most advanced short-stroke V8 engines! The compact, super-efficient design of these great V8's reduces friction and wear . . . delivers a higher output per pound of engine weight. You save on upkeep and operating costs! And with a modern 12-volt electrical system, you get double the voltage for quicker starting plus a greater reserve of electrical power. *With two power-packed V8's and five gas-saving 6's—it's the greatest engine choice in Chevrolet truck history!* See your Chevrolet dealer for details. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

*V8 standard in the new L.C.F. models, an extra-cost option in all others except Forward-Control models.

NEW CHEVROLET *Task-Force* TRUCKS

A Look Ahead

WHAT ABOUT EQUIPMENT? Is a real shortage of some widely used types in the making? Construction activity now is at record levels. It may edge still higher next year. A serious shortage of equipment next spring would put many contractors across the barrel.

There's been so much talk about the possibility of an equipment shortage early next year that we decided to check the situation with leading manufacturers. Here's what they told us:

First, equipment is in pretty tight supply right now. It has been since last spring. Manufacturers are operating at capacity. Even so, demand is so heavy that they are unable to build any sizable inventories of finished equipment. Some makers of tractors and light equipment reported delays in deliveries of up to six months. For heavier equipment, deliveries are delayed up to three months.

Second, it's not easy to boost production. Manufacturers are doing their best, but they have their troubles, too. Most of them say the principal bottleneck to increased production is the difficulty of getting component parts.

"We can increase our production to meet the demands of the industry," one manufacturer told CM&E, "but we can't control the delivery to us of the parts we must buy to install in the equipment." Others say shortages of copper and steel are holding up production.

Most manufacturers are confident they can raise production to meet expected demand. But they say there are a lot of factors over which they have no control that could throw the supply-demand situation out of balance.

All this adds up to a difficult problem for contractors. It's not always easy to anticipate equipment requirements a year—or even six months—ahead. But every contractor certainly should be aware of this situation.

Construction and the Public

ALL SEGMENTS of the construction industry including manufacturers, distributors, contractors, and engineering firms can learn a worth-while public relations lesson from General Motors Corporation's Powerama (See p 216, *Methods* Memo). This spectacular exhibit of diesel power fascinated nearly 2,250,000 visitors. It gave them a deeper insight into the many uses of industrial power and showed the prodigious variety and capacity of construction machinery.

Powerama was more than just good promotion for a single company's products. It also promoted an idea. It educated the public to the tremendous amount of power that is required to handle what to the uninformed layman seem simple tasks.

The construction industry, a prime user of diesel power, was one of the focal points of the exhibit and one of its main beneficiaries. The lay public could see, and in some instances actually operate, the mighty machines that make modern construction possible.

People could not help but leave the exhibit with a better understanding of construction problems and construction costs. A taxpayer seeing the array of road-building equipment, for example, is likely to be far more willing to accept increased highway building costs because he can appreciate the contractor's necessarily high investment in the machines to do the job.

For most business firms it is not feasible to put on such a huge exhibit as GM did. But the idea behind the show can be employed successfully at all levels on a more modest scale.

Such things as open houses, demonstrations, exhibits, tours of shops, yards, and jobs all can perform a service in making contractor operations intelligible and acceptable to the construction buying public. They also can help channel mechanically minded 20th Century youth into the field of construction. And they can build a not inconsiderable amount of goodwill for the individual company. Let's have more of them!

Northeast Rebuilds Fast

THE WORST FLOOD in years had just begun to recede when construction crews swarmed over the ravaged countryside. Contractors, large and small, from all over the Northeast answered the call. They left only skeleton staffs at their own jobs and threw their resources into emergency reconstruction work.

It was a tremendous job. Roads had to be opened fast and temporary bridges pushed across at vital crossings. Hundreds of highway and railroad structures lay crumbled like match-sticks.

The speed with which contractors moved in was remarkable. Less than a day after the flood, state highway engineers called hasty meetings with all available contractors. They were short meetings. Con-

tracts were awarded on the spot. In most cases, there wasn't even time for designs; contractors just grabbed whatever material they could and started building.

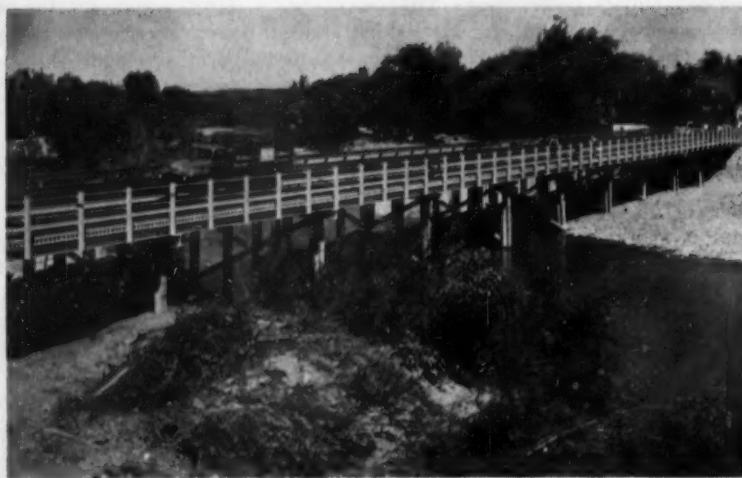
The story was the same in the offices of hard-hit railroads like the Lackawanna, the Erie, and the New Haven. In Ansonia, Conn., a big through-thruss span of a railroad bridge was tottering on the shaky remains of a stone abutment. A contractor got his assignment with these words: "There's your bridge—save it." And he did.

First temporary bridges to go up were the Baileys rushed from all over the country. Instructed by representatives from the Army's Corps of Engineers, contractors soon became expert at throwing up the



Steel Pile Bridge Put Up in 11 Days

TEMPORARY steel pile-bent bridge connecting Stroudsburg and East Stroudsburg, Pa., nears completion (above) just upstream from washed-out bridge. Contractor G. A. & F. C. Wagman of Dallastown, Pa., started driving piles less than two days after flood. Soft riverbed forced him to drive steel H-piles from 70 to 110 ft to reach firm bearing. But he worked 14 hr a day and cars rolled over the completed bridge only 11 days later (right). All-welded bridge is 420 ft long. It is topped with steel-grating 22 ft wide.



After Devastating Flood

by ALBERT C. SMITH
Associate Editor

war famous structures. More than 40 now are in use. Most of them were erected only a few days after they arrived at the site. The largest crosses the Naugatuck River at Waterbury, Conn., in two 150-ft spans. It's a triple-double type capable of handling heavy loads.

Big problem with the Baileys was not erecting but preparing the sites. If old piers were used, they usually had to be repaired first. Fills behind abutments were nearly all washed out and had to be replaced. Another problem was launching areas. Bailey Bridges are assembled ashore and gradually pushed from behind in cantilever fashion. This requires a long and level launching area, and it takes time to build.

(Continued on next page)



STEEL H-PILE is snaked into 70-ft leads hung from P&H truck crane. Bay City crane in background places cap. Bents consist of five piles with welded steel cap and cross-bracing. Bethlehem Steel Co. shipped 300 tons of steel to site in record time.



PILE HAMMER finishes driving and retracts inside leads to make room for another pile. Hammer is new Delmag diesel type which develops about 16,000 ft-lb. It is economical to operate, uses inexpensive diesel fuel, and is fast to set up.



CONNECTING PLATES are welded to steel stringers. Nearby is twisted remains of vehicles and old bridge trusses. Welding played important role in fast job. Contractor used nearly 15 welders to splice piles and attach bracing, caps, and deck.

Northeast Digs Out...

If the Bailey was placed across a location that was too wide for a single span, the contractor had to build a center pier. Sometimes quickly driven pile clusters did the job. But often there were snags. One contractor tried piles, but rock was too close to the riverbed and wouldn't hold them. So he switched plans and cut up the piles to make a rock-filled timber crib. It worked, but it took a few more days to complete.

Bailey Bridges solved many of the immediate problems, but highway departments will try to replace them as soon as possible with temporary bridges. Baileys accommodate only single-lane traffic and are expensive to maintain.

Temporary Bridges

Scores of heavier temporary bridges went up in the first weeks, mainly because the supply of Baileys was limited. Some of the heavier bridges were thrown across new locations; others were placed right over the old centerline. Often bridges were put back in service quickly with a few thousand yards of fill. This was usually the solution where some spans had held, but the approach embankments behind the abutments had been washed out.

Most often, however, large floating objects had dragged spans hundreds of feet downstream, severely damaged piers, or pulled them right out. Each of these jobs posed different problems. Generally, the washed-out spans were not salvageable. So contractors concentrated on temporary timber and steel-pile trestles. At hard-hit Stroudsburg, Pa., for instance, a 420-ft steel pile-bent bridge was erected in only 11 days.

The railroads relied heavily on temporary trestles to get their lines back into service quickly. They also called on contractors to do a fast job of rebuilding permanent structures where possible. Near Springfield, Mass., a wide gap in a New Haven Railroad embankment was rebuilt over a brand new box culvert in remarkably fast time. It took round-the-clock work, but the railroad had trains running in only two weeks.

Contractors are working swiftly and skillfully to repair what is probably the greatest flood damage in history. Cooperation with state officials and the Army's Corps of Engineers is excellent. It's an outstanding job all around—a job to be proud of.



WRECKED TRUSS at Satin's Kingdom, Conn., lies in shambles on riverbed. Its sister truss remained on piers, but it is badly twisted. State officials gave Whaling City Dredge and Dock Co. job of repairing twisted truss and replacing collapsed span with trestle.



TIMBER POST BRIDGE is thrown up after collapsed span, top photo, is dismantled and removed. Steel stringers from deck were salvaged and used on temporary timber bridge. Remaining truss is straightened by pulling with steamboat ratchets. Twisted members will be replaced. Span will take light traffic until new bridge is built upstream.

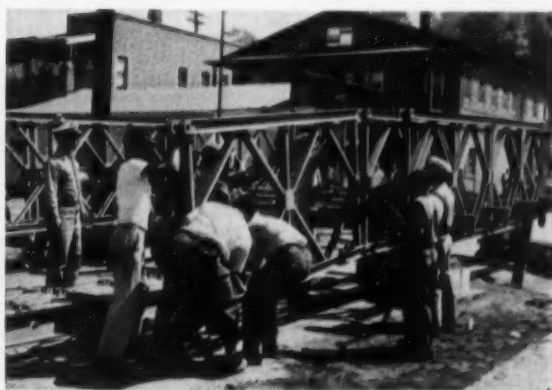
Bailey Bridges Go Up Fast After Site Is Prepared



STEEL JOISTS for double Bailey Bridge are moved from stockpile by Michigan truck crane and placed close to erection crews. Job is being done at Union City, Conn., by C. W. Blakeslee & Sons Inc.



ROLLERS on both land and piers support bridge during erection. Long section is first assembled on land and then pushed across river by cantilevering front end. Rollers are later removed and bridge lowered on to rebuilt piers and abutments.



STEEL PANEL 10 ft long and 5 ft high is erected by hand and pinned in place. Officers of Army's Corps of Engineers and trained highway department crews supervised erection.

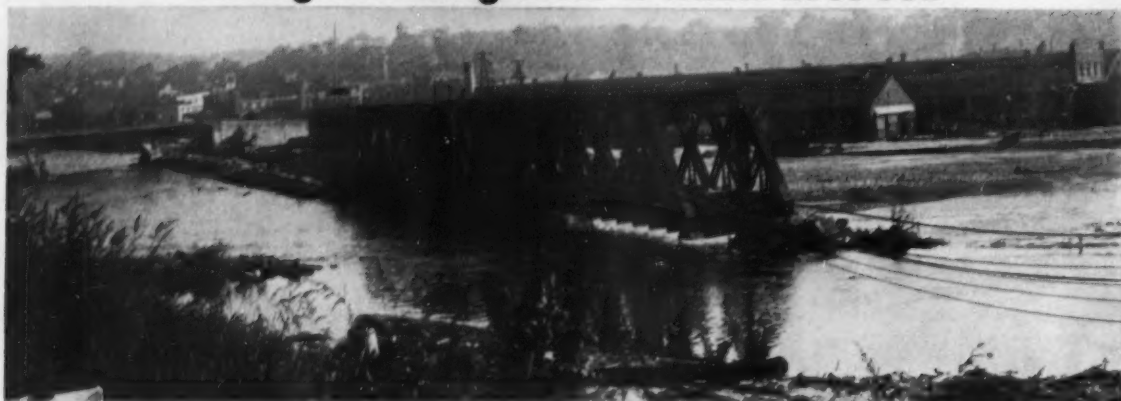


DOUBLE-DOUBLE Bailey Bridge 220 ft long is pushed across Farmington River at Collinsville, Conn. Double-double term means two panels wide and two panels high. Launching nose, which takes up deflection as bridge cantilevers, has landed on far bank. Work-

men of White Oak Excavators Inc. of Hartford, Conn., string rope guardrail along catwalk on outside of bridge. Contractor erected span in less than two days, but he first had to repair piers and prepare launching site.

Northeast Digs Out...

Saving Tottering Truss Is Hazardous Job



Problem...

Through-truss span of New Haven Railroad near Ansonia, Conn., totters on one corner of washed-out abutment. Receding Naugatuck River swirls into new channel cut behind abutment by raging flood waters. Contractor C. W. Blakeslee & Sons of New Haven, Conn., was awarded job with these words: "There's your bridge—save it." And he did.

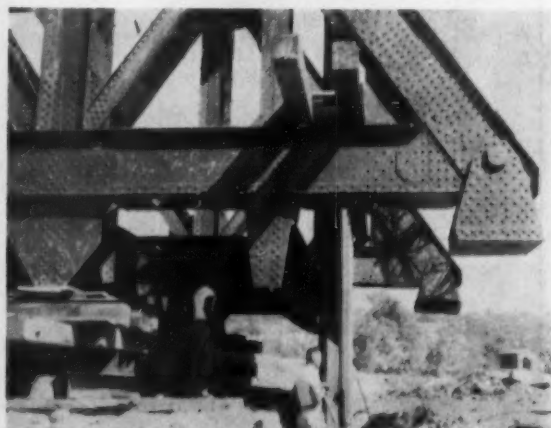


Solution...

Contractor cautiously built gravel ramp out to abutment, watching vibrations carefully to keep truss from slipping off abutment. He then built cribbing under hanging end, placed jacks with total of 500 tons capacity, and lifted truss back in place. Ramp was then extended, truss blocked up, jacks removed, and old abutment replaced.

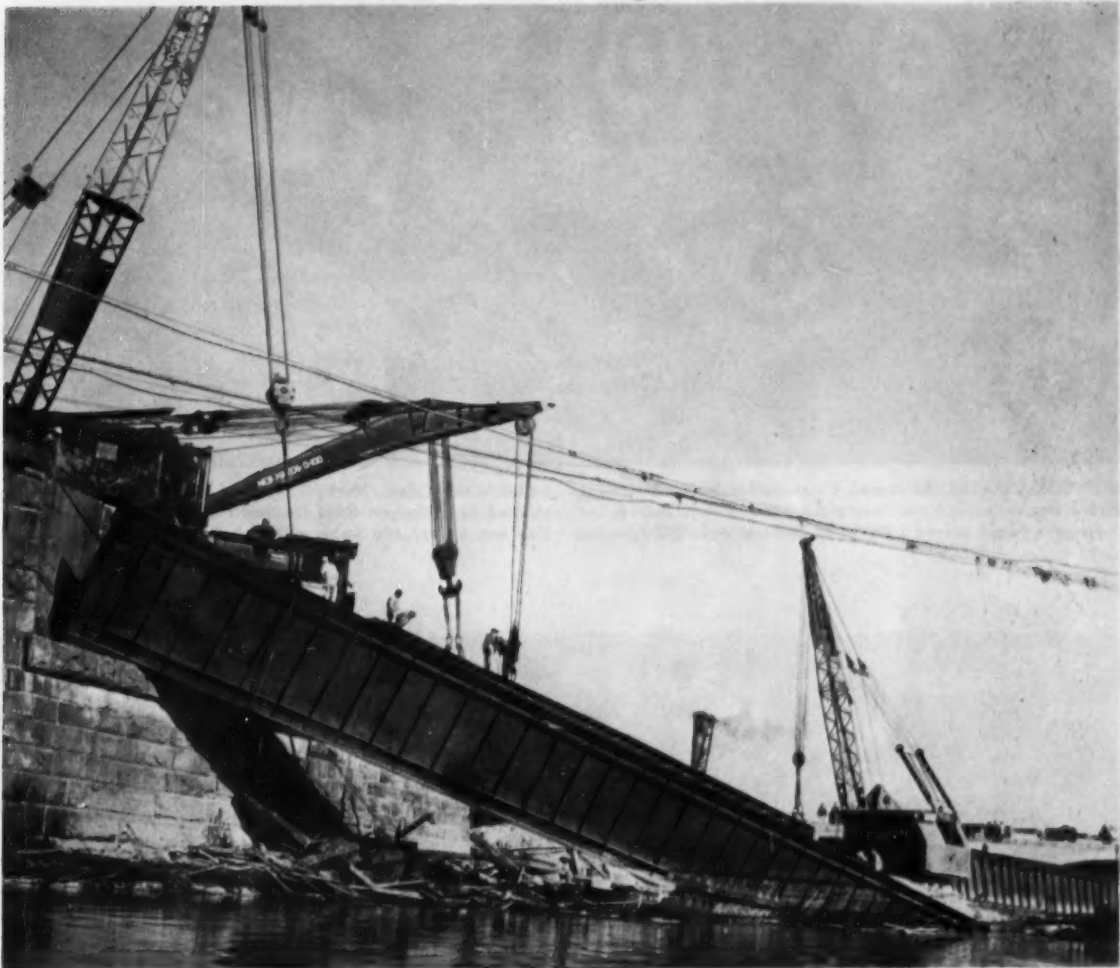


SHEET PILES for cofferdam are set in place before driving. Cofferdam will be built completely around end of truss and excavated. Steel Monotube piles will be driven inside to support new concrete abutment. Contractor also will replace embankment.



ROCKER SUPPORTS at end of truss hang in mid air as sheet piling is placed for cofferdam. Truss will be supported on timber blocking until new abutment can take load. Contractor removed tons of debris from deck to reduce weight. Job took one month.

Box Girders Are Tough to Handle



HUGE BOX GIRDERS of railroad bridge at Waterbury, Conn. are slowly pulled out of Naugatuck River. Double-girder units are first cut apart so that each side can be picked up separately. Hefty locomotive crane lifts one end of 70-ton girder as Manitowoc crawler

crane helps skid other end. Bethlehem Steel Co. rushed sufficient 1½-in. wire rope to reeve big cranes. Girders will be refabricated and then set on temporary piles as new piers are built. Contractor is Foundation Co. of New York.



CONTRACTOR PONDERS tremendous job of getting railroad bridge back in shape. Three box girders were washed away, and most of the piers were ruined. Track, lying in water at left, is still intact. New England Dredge and Dock Co. of New Haven, Conn.,

moves in small tractor-mounted pile driver to drive test piles. Contractor plans to hoist and jack box girders on to temporary pile clusters. New piers will be built underneath. In background, river bed material is excavated to rebuild railroad embankment.

Northeast Digs Out...



TWIN BOX CULVERT 165 ft long is constructed in 300-ft washout of New Haven Railroad near Springfield, Mass. E. T. O'Neill & Son of Holyoke, Mass., placed 2,200 yd of concrete and 75,000 fbm of

lumber in seven days. Nearly 300 tons of fabricated reinforcing was shipped by Bethlehem Steel Co. less than a week after ordering. Line was opened two weeks after job started.



LOCOMOTIVE CRANE owned by Philadelphia contractor, Brann & Stuart, places cap on pile bent of 400-ft temporary railroad trestle south of Stroudsburg, Pa. Timber bents on land are supported on sills and river bents are steel H-piles. Steel stringers span bents.



DIRT AND DEBRIS are dozed out of Naugatuck River near Ansonia, Conn., by Cater-



EARTH COFFERDAM is built around battered truss by Caterpillar D7 dozer. Contractor has to dewater area before he can

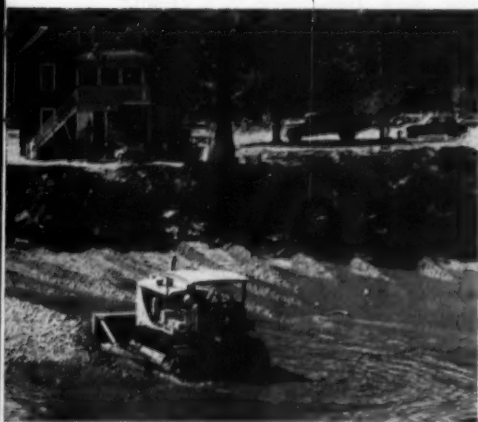
Corps of Engineers

Spurs Big Cleanup Job

BIGGEST PROBLEM facing the Army's Corps of Engineers right after the flood was restoring the rivers to their normal channels. Scores of contracts were awarded for cleaning up debris, removing collapsed bridges, and excavating riverbed deposits. Earthmoving contractors have brought in big equipment fleets, and they're doing fast work. All contracts are on a cost-plus basis.



THICK DEPOSITS of gravel in Naugatuck River at Waterbury, Conn., are excavated by Link-Belt Speeder dragline, dumped into fleet of Euclids, and spread over washed-out areas near the river. Bailey Bridge at left is triple-double type with two 150-ft spans.



pillar D8 tractor. More than 50 mi of this river needs major face-lifting.



RUBBLE surrounding ruined homes in Stroudsburg, Pa., is loaded into dump truck by Traxcavator. This area near Brodhead Creek was hardest hit in Pennsylvania.



excavate and cut up steel for removal. Truss was washed several hundred feet downstream at Union City, Conn. Bailey now replaces it.



SMALL DOZER, a John Deere, feeds muck to clamshell crane for placing in dump trucks and hauling away. Small units, especially front-end loaders, were indispensable on clean-up work. They could move almost anywhere and turned in top production.

Here's a Way To Cut Costs

A CAST-IRON CLIP that costs only a few pennies is making it possible for builders to erect lightweight, reinforced concrete slabs with a speed and economy that is dazzling.

Edward S. Klausner, New York City structural engineer, (right) developed the new technique which is known as the "K System". Knickerbocker Construction Corp., New York, is using the system to save approximately \$90,000 in the construction costs of a 12-story apartment building in New York City.



PLYWOOD FORM rests on "K" clip hooked over the top flange of lightweight steel joist. Forms must be cut to exact span of joists to prevent concrete from leaking out.



WELDED WIRE MESH goes down on plywood. Concrete will follow. Cost of installing concrete floors by the "K System" is \$1 per sq ft less than by usual methods.

THE SECRET OF THE "K System" for installing concrete flooring is a two-ounce clip. Using these clips, Knickerbocker Construction Corp. has erected more than 100,000 sq ft of slab in less than seven weeks, an average of more than 14,000 sq ft a week. And the cost is only 45c to 50c per sq ft—about \$1 per sq ft less than the cost of normal flat plate construction.

The clip fits on the top flange of a lightweight steel joist and supports plywood forms between the top flanges of adjacent joists. This produces a deck strong enough to take all normal construction loads.

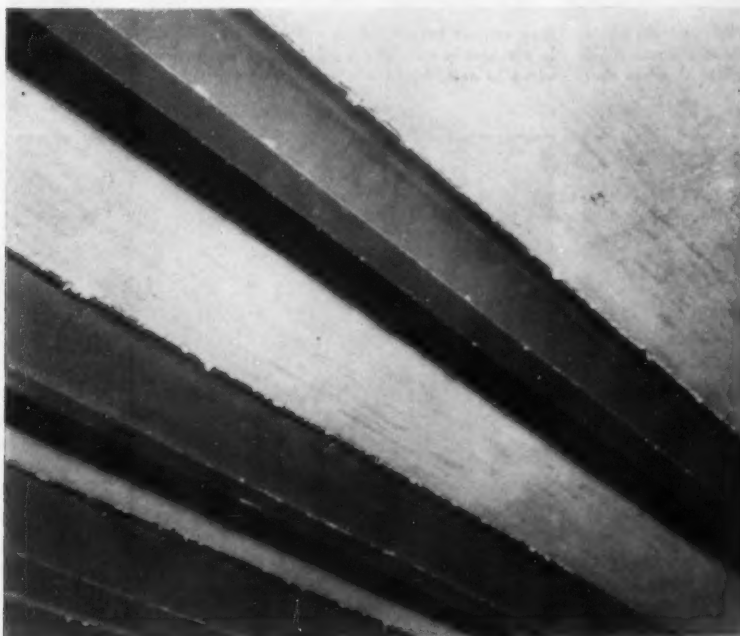
A single layer of 66-1010 welded wire mesh is laid over the form, and 2¼ in. of 2,000-lb concrete is poured and finished. Stripping the forms is simply a matter of snapping the brittle cast-iron clips from beneath with a sharp blow of a hammer. The plywood form drops down and can be reused as many as 20 times. Part of the clip remains permanently in the floor. At the New York apartment job, two men have been stripping approximately 10,000 sq ft a day.

This simple, speedy process produces a fully fireproof, 275-psf capacity floor. The clips, used with ¾-in. plywood, eliminate the need for shores, a big cost factor. The slab weighs only 35½ psf compared with an average weight of 75 psf for flat plate, 6-in. slabs.

Design of the apartment job calls for 2x8-ft plywood forms. Edges of the adjacent flanges are 2¼ in. apart, and joist lengths



CONCRETE IS DUMPED on to the forms. The clips test as high as 1,800 lb and, with the plywood forms, produce a deck strong enough to take any normal loads.



FINISHED FLOOR is fully fireproof and has 275-psf capacity. It weighs less than half the average weight of flat plate, 6-in. slabs—35½ psf against 75 psf.

are multiples of 8 ft, again plus ½ in. Framework of the building is bolted rather than riveted.

John Ullman, construction superintendent on the job, points out that two men can carry and place the 16-ft, lightweight steel joists. "The men hold the beam with one hand and place the bolts with the

other hand," he said. "That way, you're not tying up your crane or derrick placing secondary members."

Klausner says his "K System" can be adapted to a wider span and to almost any loading. The clips test as high as 1,800 lb. The system can be used for any type



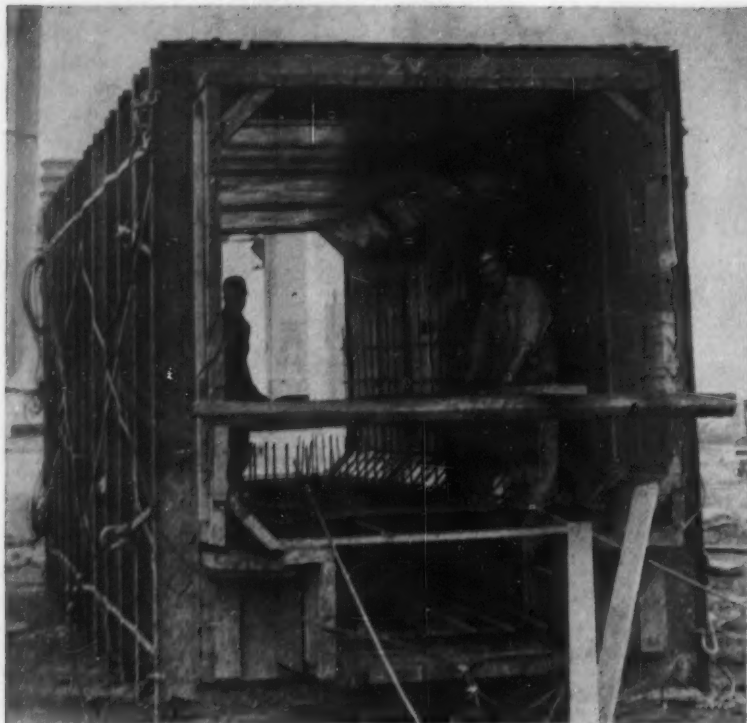
WORKMAN USES PIPE to knock off bottom of brittle cast-iron clip, allowing plywood form to drop. Form can be reused 20 times.

of building, but is particularly attractive to apartment house builders because it produces a building with a Class I fireproof rating at a cost equal to standard wood floor construction. Klausner has plans to use the "K System" in the construction of six more apartment buildings.

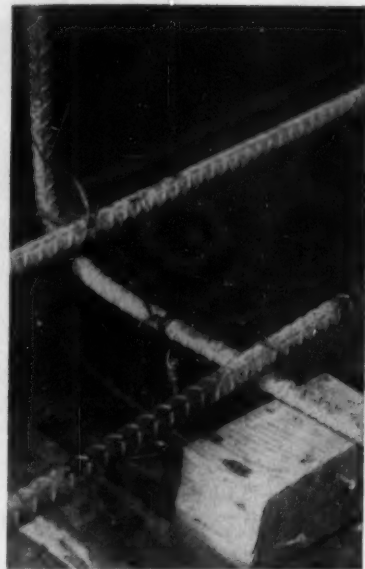
Architects for the apartment project on East 35th St. in New York City, are Maxon, Sells, Finke, and the general contractor is H. R. H. Construction Corp., both of New York. The lightweight steel joists were fabricated by Jones & Laughlin Steel Corp. in its Long Island City, N.Y., plant.

Klausner plans to sell the clips for from 6 to 8¢ depending on size. They are cast by Crompton Knowles Loom Works at Worcester, Mass.

Integral Form and



COLUMN FORM for pier shaft of Philadelphia bridge looks like a box culvert as it lies on its side while reinforcing bars are assembled inside it. Workmen are erecting staging on which to stand so that



they can set bars in upper half of form. To hold reinforcing cage in place while assembly is placed for pouring, bars are blocked and wired to nails driven into form panel (above).



CRAWLER CRANE, a Koehring 1005, tilts the box form up so that projecting inserts can be welded to reinforcing rods (right photo). This is one of smaller forms on job involving 58 piers; others are as



much as 30 ft long and weigh up to 30 tons, including 2 to 3 tons of reinforcing steel. The Koehring crane lifts and places them with ease and also handles concreting.

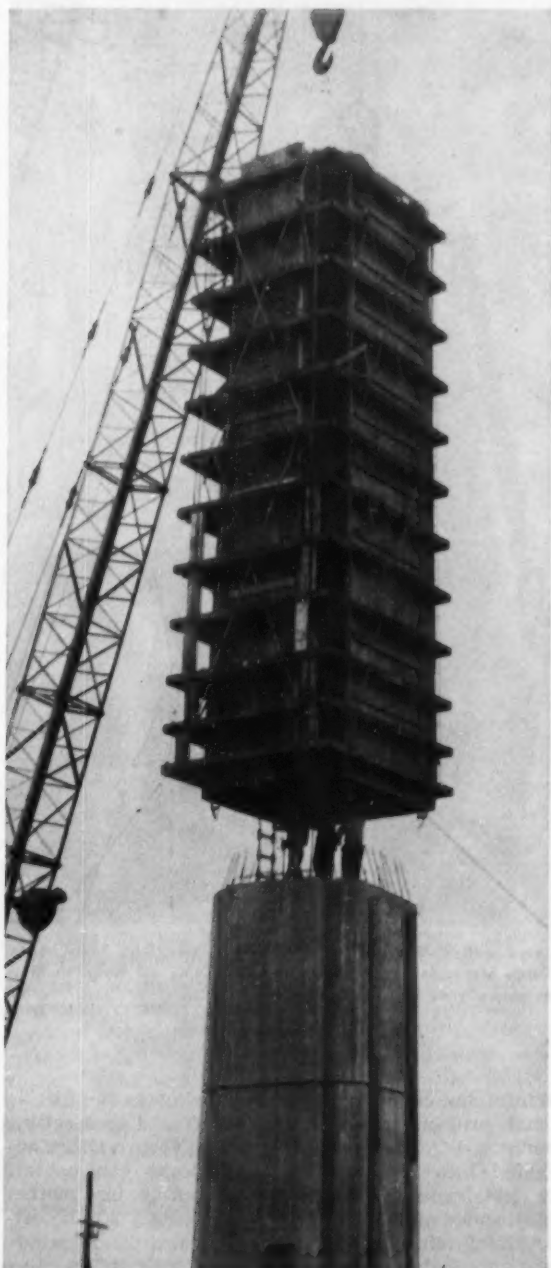
WANT TO SAVE better than 50% in time and labor of placing reinforcing and forms for shafts of concrete piers? Want virtually to eliminate hazardous work on reinforcing and forms up in the air on the piers? You can do it by setting

the steel reinforcing bars into wood box forms on the ground, then lifting the entire assembly to place as a unit. That's the experience of Philadelphia's Conduit & Foundation Corp., who are building 58 piers for an approach to the new

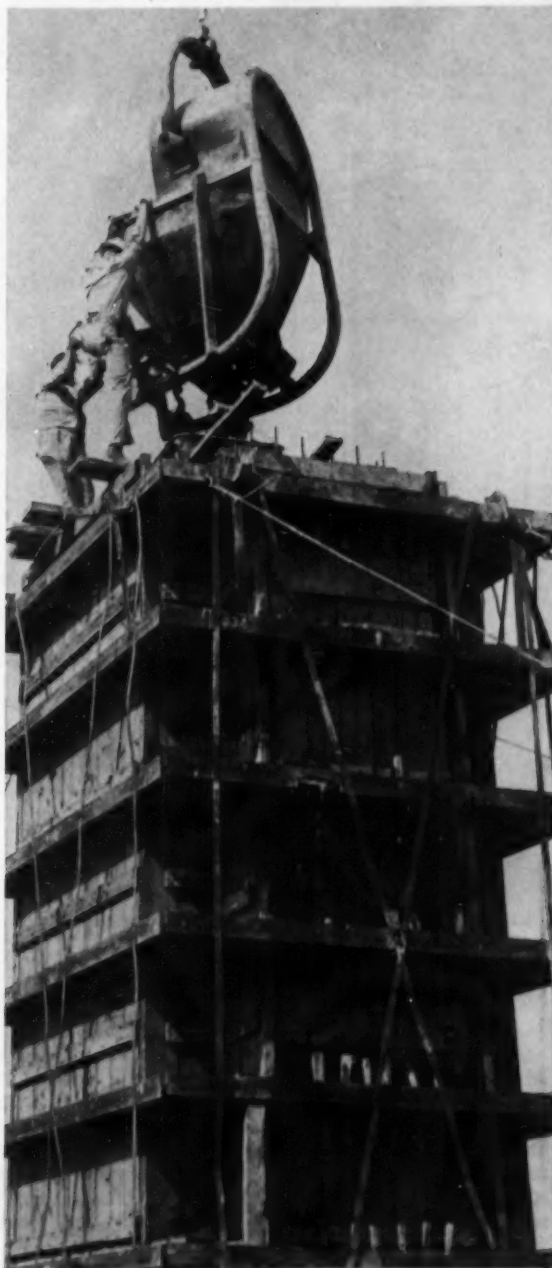
Walt Whitman Bridge over the Delaware River (CM&E, Aug, '55, p. 62 and Dec., '54, p. 70).

Pier shafts for this Philadelphia job are as high as 80 ft and as much as 10½x15½ ft in section, with faces battered ¼ in. per ft.

Reinforcing Assembly Cuts Work on Bridge Piers



COMPLETE ASSEMBLY, including all necessary reinforcing steel for the pour, is swung into place atop previous lift of concrete. It will be bolted to inserts at the bottom and guyed at the top.

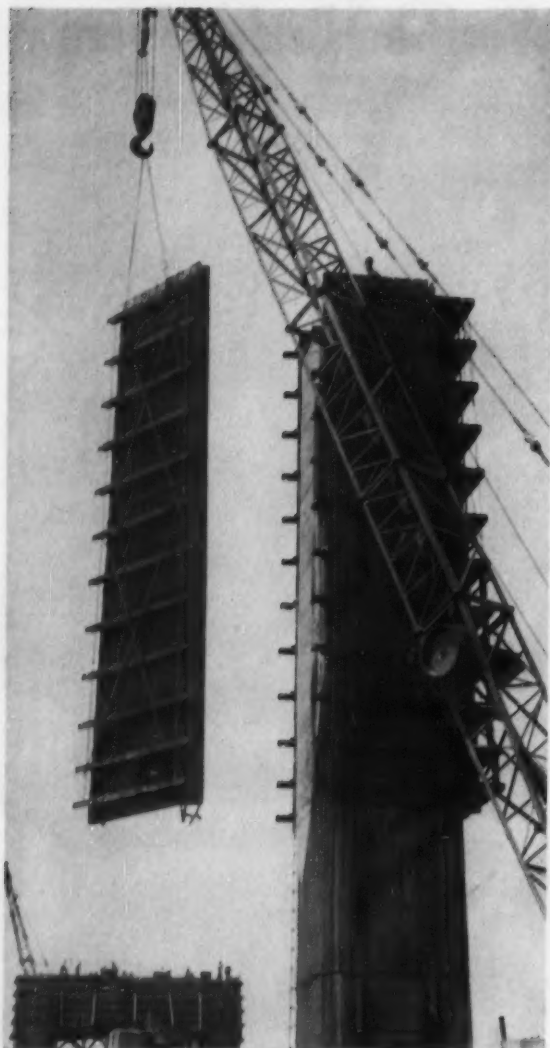


CONCRETE POUR is made in standard fashion, with mix handled by Gar-Bro laydown bucket that dumps into elephant trunk. Diagonal and longitudinal 2-in. steel strapping helps keep form square.

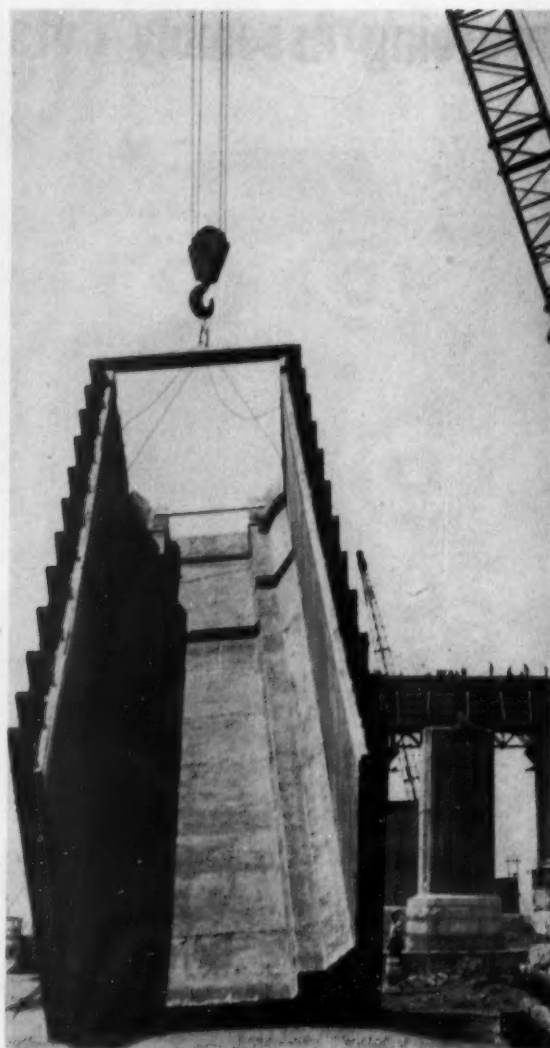
To pour them, a box form is first assembled lying on its side on the ground. It is made up of 4x12 boards milled to 3 in. and lined with $\frac{3}{4}$ -in. plywood. Girdling the box are sets of 10-in. 30-lb steel H-beam wales whose corners are

held together by $\frac{3}{4}$ -in. key bolts and wedges. To support the wales and to prevent the form from getting out of square during handling, 3/16x2-in. steel strapping is welded longitudinally and diagonally to the wales all along the form.

Inside the assembled form, $\frac{3}{4}$ - and $\frac{5}{8}$ -in. steel reinforcing rods are placed and tied into a cage. Wood blocks maintain the correct 3-in. spacing from the form panels. To support the reinforcing cage temporarily when it and the sur-



FORM STRIPPING is simply a matter of taking out key bolts from one side, lifting one panel off, then removing other three as a unit (right photo). Form consists of 4x12-in. lumber milled to 3 in. and



faced with $\frac{3}{4}$ -in. oiled plywood. Wales are 10-in. 30-lb beams. Forms are reused as many as 30 times, being cut down to fit as necessary when cross-sections of shafts lessen.

rounding form are later being placed in pouring position, double-headed nails are driven into the form panel on either side of the spacer blocks and the rods wired securely to them. Additional No. 9 wires run from the upper rings of reinforcing to the wales for the same purpose.

A completed form and reinforcing assembly may be up to 30 ft long and weigh 20 to 30 tons (including 2-3 tons of reinforcing). The unit is swung by crawler crane from horizontal to vertical position and placed for pouring. The form itself is held in place at the bottom by anchor bolts cast into the previous lift of concrete, and at the top by two wire-rope guys at

each corner. The reinforcing cage inside is tied to that projecting from the earlier pour.

Concrete is bucketed into the form. As the pour rises, spacer blocks and the double-headed nails that anchored the reinforcing's temporary support wires are removed.

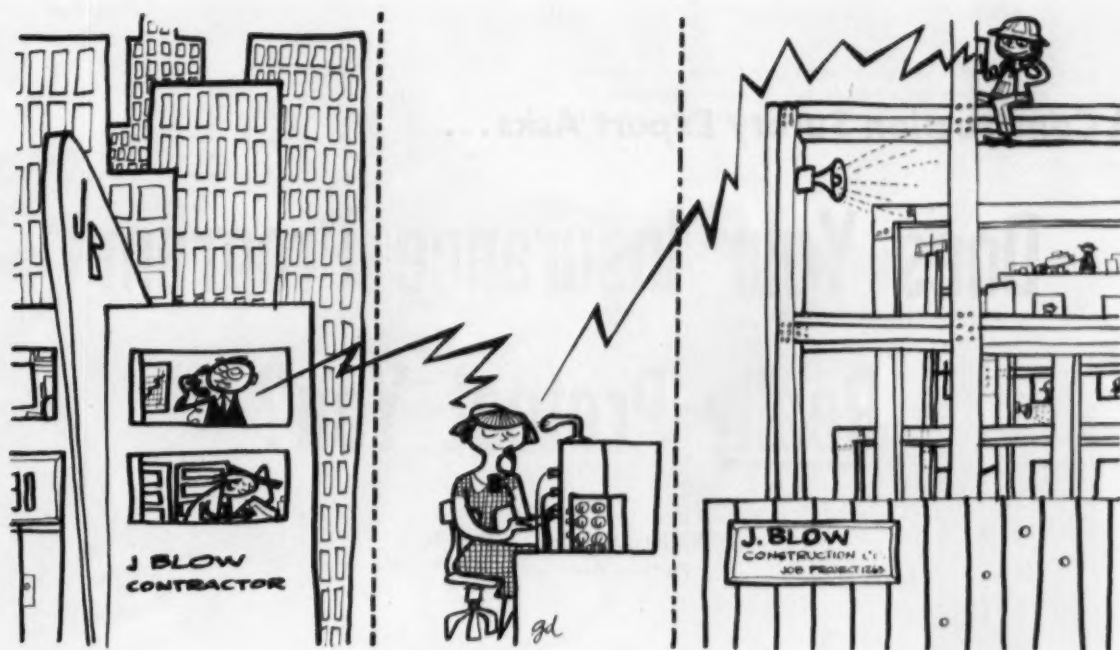
Forms are stripped in two pieces. Enough key bolts first are removed so that one side panel can be pulled, then the other three come off as a unit. Forms are reused as much as 30 times.

Conduit & Foundation Corp. finds its reinforcing-form assembly both economical and extra safe. They estimate it saves better than 50% in time over more convention-

al methods (placing the reinforcing on the pier shaft and then setting the form, or vice versa). Other advantages: 1) Crane can operate with shorter boom because neither form nor reinforcing has to be lifted over the other; 2) Men are safer and more efficient because they work almost exclusively at ground level.

John Sloan is general superintendent for Conduit & Foundation Corp., and Edward DeVinney is supervising construction and erection of forms.

Consulting engineers for the Delaware River Port Authority's \$90,000,000 suspension bridge are Modjeski & Masters and Ammann & Whitney. Homer Seeley is resident.



Nobody's out of contact on these building jobs because . . .

Speakers Lick Communications Problem

ANYBODY WHO HAS ever tried to locate a worker "somewhere" on a big building job will appreciate the ease with which the man in the office and the man on the girder can communicate at two huge New York City building projects.

A well-planned loudspeaker system that mushrooms as the job progresses enables an operator at a central telephone switchboard to page to a near-by telephone any worker on the New York Coliseum. A similar system provides excellent communication at the 45-story Socony-Mobil Building.

Anybody Can Be Reached

To contact his floor foreman, for example, all an office man has to do is pick up a phone and call the job number. The operator pages the foreman to the nearest phone—they are located on every other floor—and in a few minutes he has his instructions.

While the Coliseum project was still in the design stage, sound engineers surveyed the plans and laid out a schedule that called for loudspeakers to be placed as soon as the steel was erected. Currently there

are 128 speakers on the project from the foundation to the top floor.

"Because this job is so big, I don't know how we'd get along without the speaker system," says David G. Aronberg, chairman of the operating committee for Walsh-Slattery-Fuller, joint-venture general contractors. "It not only provides excellent contact between the front offices and the job, but it also expedites the flow of materials. It's common to hear the girl handling the microphone say 'Truck load of 2x4's waiting to be unloaded at 58th St.' I don't know how long it would take us to get the right materials to the right places without the system."

At the very beginning of the project, two RCA 250-w amplifiers and associated preamplifiers—enough power to supply peak demands—were installed in the telephone operators' room. As the job progresses new speakers are delivered on demand by Commercial Radio-Sound Corp., RCA distributor in New York.

Installation at the Coliseum is part of the electrical contractor's job. They follow location directions

formulated by the sound engineer so that the speakers can be heard anywhere on the project. To eliminate special risers, conduits for air conditioning wiring or other electrical lines are used to carry the wiring for the speakers.

Speakers Follow Steel

The speakers are installed as soon as steel goes up a floor, according to Arvin Webster, in charge of the system for T. F. Jackson, one of the electrical contractors. He estimates the speakers and their installation cost between \$7,000 and \$9,000.

On the Socony-Mobil job, the telephone switchboard and the amplifiers are located in an office a block away from the site. The same procedure is followed on this job. When a call is received on the switchboard, the girl uses the microphone to speak through the 150 loudspeakers currently spread throughout the project. In this manner, it is possible to speak to any worker on the job, whether he is aloft on the girders or installing plumbing in the basement, in a matter of minutes.

A Construction Surety Expert Asks...

Does Your Insurance Program Really Protect You?

By EDWARD G. ARMITAGE
Partner, Armitage & Co.

Better than 10% of the average contractor's overhead is spent on insurance. Yet he probably knows less about it than any other thing he buys. This is the first of a three-part series written for CM&E by Edward G. Armitage, who has been handling contractors' insurance for 22 yr.

I AM FIRMLY CONVINCED the construction industry requires more insurance protection than any other business. This is true because no other industry faces as many varied risks.

The contractor's job is to change a blue print into a steel and concrete reality sometimes worth millions. In the process of doing this, he assumes an enormous amount of responsibility for his men, his equipment, and for the project he is constructing. His liability can extend from before he starts a job and it continues after he has left and moved on to another. A lot can happen during that time.

Construction equipment presents problems of accident prevention more difficult to anticipate and solve than does the machinery of factories, for instance. Factory machines are stationary and can be equipped with permanent safety devices. Construction equipment is usually mobile, and it is sometimes called to work under extremely hazardous conditions. Damage to the machine itself is a lot more likely to occur, and the

machine is more apt to damage its surroundings.

Although insurance is an important and expensive part of his operations, the average contractor probably knows less about it than about any other thing he buys in the course of running his business.

The smart contractor can no longer get along with a "let John do it" attitude about insurance. The broker plays an important part in obtaining for you adequate coverage at a fair price. But he is only your link with the insurance companies. It is when the broker and the contractor work as a team that they work best. To do this, both must have a working knowledge of the other's problems.

In other industries, insurance is fairly static: values are adjusted, new locations covered, but the basic coverages remain the same. Not so in the construction industry, where each new contract presents its own problems.

For this reason, it is a prime requisite of any practical insurance program to choose a broker you have faith in and then to accept him as a valuable business ally. The insurance companies can offer protection against almost any hazard you have to face, but because they then assume a great responsibility, their coverages are necessarily complex. To serve you best, the broker must know what you are doing, how you are doing it, and when you are doing it.

The contractor who considers an insurance broker a salesman to be

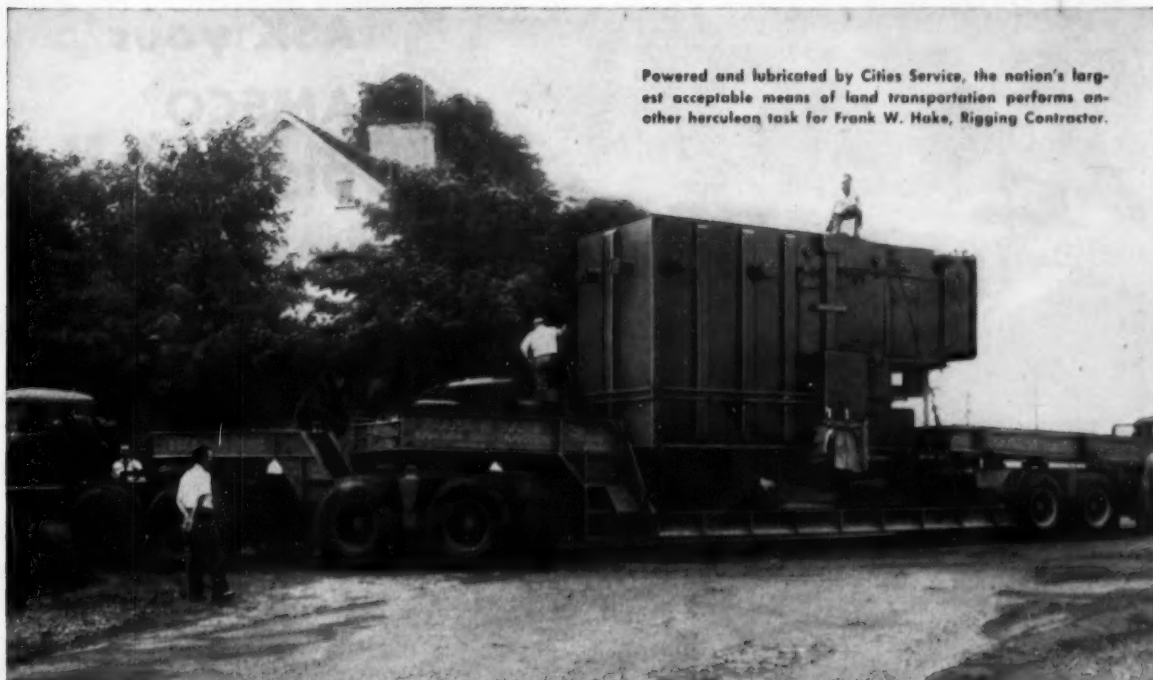
kept in the dark as much as possible about his operations is looking for—and will usually find—trouble.

This article is not meant to be a comprehensive analysis of insurance but rather a discussion of some aspects where the contractor, because he knows little about the subject or is misinformed, may not be getting adequate coverage at fair rates.

Even such a seemingly cut-and-dried classification of insurance as Workmen's Compensation can have important considerations that can increase your coverage on one hand and reduce your costs on the other.

For instance, Employers' Liability is a clause usually written into the Workmen's Compensation policy. Its principal function is to protect against losses under what is known as liability over-action. In most states it is impossible for an employee to sue his employer because he is theoretically compensated for his injury by the courts. However, if he is not satisfied with the compensation awarded him there, he can take to court other interested parties, such as an owner or a sub.

Should the injured man do this, it has become the practice for the owner or the sub immediately to join the contractor in the action. Thus, although the injured man is not directly suing his employer, the contractor is nevertheless made a party to the action. Even if the contractor is held not liable, such an action would mean a long fight



Powered and lubricated by Cities Service, the nation's largest acceptable means of land transportation performs another herculean task for Frank W. Hake, Rigging Contractor.

A MOVING EVENT: 241 TONS OVER SECONDARY ROADS!



"Our Best Move Was To Cities Service," says Partner Glenn Hake. "It's been paying off for eight years with less down-time, less oil consumption, greater period between overhaul. I heartily recommend Cities Service products for any rigging operation."



More Craning, Less Straining is another benefit enjoyed by the Frank W. Hake firm, using Cities Service products. Trucks, tractors, trailers, hoisting engines—all 36 pieces of mechanized equipment get Cities Service care.

Carrying a 91-ton transformer over secondary roads is just routine work for this mammoth rigging unit of the Frank W. Hake rigging firm, Philadelphia, Pa.

The nation's largest acceptable means of land transportation, the unit measures over 106 feet long, 12 feet wide, 17½ feet high and weighs 150 tons just by itself!

All told, that's 241 tons on the move, thanks to the power and lubrication of Cities Service petroleum products!

Why Cities Service? Partner Glenn F. Hake puts it this way: "When you work with the biggest piece of equipment, you've got to choose the petroleum products that do the biggest job . . . and that's Cities Service. For the past eight years, we've used Cities Service gasoline, diesel fuel, lubricants, and solvents—in all our transportation and construction equipment . . . trucks, tractors, trailers, truck cranes, hoisting engines, air compressors, and other equipment too numerous to mention. In fact, we even use Cities Service Fuel Oils to heat our business properties and our homes.

"We can truthfully state, without reservation, that we have had excellent service and performance at all times, and would heartily recommend Cities Service products to others."

If you're interested in Mr. Hake's suggestion, talk with a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES  SERVICE
QUALITY PETROLEUM PRODUCTS



RETAINING WALL crashes on crane. Fortunately contractor had good insurance coverage.

in court, with correspondingly high lawyers' fees.

Employers' Liability will not only pay any judgment rendered against you, up to the limits you carry, but it will also pay the cost of your defense against such actions.

Court Costs Are High

There is a principle here that applies to all liability policies, and it is an important one. Almost without exception, liability actions taken to court are long and drawn out, regardless of who wins the suit. Even if the contractor is found not liable, he may have to spend a large sum in defense.

It should be remembered, therefore, that under the terms of a liability policy, the insurance company is responsible for your defense and assumes the cost for such defense.

A word of caution concerning Employers' Liability. In some states—New York is an example—Employers' Liability coverage is unlimited. There is no ceiling on the amount of the insured's coverage. But in other states, there are specific limits to the coverage. Usually these limits are inadequate, ranging from \$10,000 to \$25,000. Make sure that your policy is endorsed for higher limits, even though there will be nominal increase in the premium rate.

This is particularly important today, because juries have a tendency to make extremely high awards when a skilled workman is seriously injured. Usually the additional premium is not high,

and the additional coverage is well worth it.

You may find yourself in unexpected trouble when you take a job outside your home state. Workmen's Compensation requirements, coverages, and rates differ from state to state. For this reason it is essential that you notify your broker when considering a job that is across a state line.

I know of several cases when a contractor failed to notify his broker when doing out-of-state work because the job "lasted only for a few days." When the contractor crossed over into a new state, he was violating the statutory provisions of the Workmen's Compensation's laws and leaving himself wide open for uninsured court actions, should an injury occur. You must, under the law and for your own protection, be sure that you are meeting Workmen's Compensation requirements in each state that you work in.

Broaden Coverage

These are two examples of when you should broaden your Workmen's Compensation coverage, even though you must pay an additional premium. Now I will discuss two instances where you may realize a savings without endangering your coverage.

In most states, the insurance company rating boards have set the premium to be paid for Workmen's Compensation at a specified rate multiplied by the employee's taxable income up to \$100 a week when taken on a yearly average.

(Continued on page 70)

ASK your AMSCO® DISTRIBUTOR for a demonstration



NEW AMSCO MF WELDER

Using the entirely new principle of magnetic flux welding, the Amsco MF Welder permits you to step up weld deposit rate and increase welding speed during hardfacing or build-up.

SIMPLE TO OPERATE

Welders connect to any standard AC or DC welding machine. You weld by hand and you can see what you're welding at all times. You'll get uniformity, good bead appearance, high weld quality—and you don't need any special skills to get the desired results.

HOW IT WORKS

The Amsco MF Welder uses a coiled, bare mild steel electrode. It feeds continuously under automatic regulation through the flux hopper. There it is magnetically coated with your choice of manganese steel build-up or hardfacing alloy which is carried in the flux. It coats the electrode as you weld at considerable savings in speed and deposit cost.

Your Amsco Distributor is ready to show you now . . . or write

AMERICAN MANGANESE STEEL DIVISION



Chicago Heights,
Illinois

make your **Amsco[®] Distributor**

HARDFACING HEADQUARTERS



The most *complete* line available—welding materials and machines for every type of build-up and hardfacing job—is stocked by your Amsco Distributor. And your Amsco man can show you how to use hardfacing effectively to increase the service life of equipment. He has long experience working with customers, helping them solve their hardfacing problems. He'll work with you, advise you and give you all the service you need.

Buy from this complete line at your Amsco Distributor: automatic and semi-automatic hardfacing welders . . . hardfacing flux, rods and electrodes . . . manganese steel shapes, including repointers, rounds, squares, flats, plate and grouser bars. Write to Amsco for the name of the Distributor nearest you. *Make him your hardfacing headquarters.* Welding products are distributed in Canada by Canadian Liquid Air Company, Ltd.



AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

Bigger, faster loads with the new **LOWBOWL SCRAPERS**

18 CU. YD. STRUCK
25 CU. YD. HEAPED

How Caterpillar's new, exclusive LOWBOWL design pays off for you!

Compare these two scrapers — the new No. 470 with LOWBOWL design and the sideboarded No. 21.

Both scrapers were loaded with the same material under identical conditions.

Result: the No. 470's net load weighed 5000 pounds *more* than the load in the No. 21—which is

a profitable margin in favor of LOWBOWL design.

The LOWBOWL concept features a bowl that has been widened and lengthened, and bowl depth has been decreased. Incoming material, meeting less overhead weight and internal friction, is loaded with less resistance clear out to the end of the loading cycle.

Result: faster loading for LOWBOWL design. Both the No. 470 and No. 456 feature this new concept in scraper engineering.

New No. 470 Scraper (left) with 5000 pounds more load than sideboarded No. 21 Scraper (right).



"BIG PRODUCTION" FEATURES

MORE POWER—300 HP at 1800 r.p.m. Ten per cent more rimpull. New 6-cylinder Cat Engine. Requires only one operating adjustment. Fan-belt tension regulated by convenient setscrew-adjustment of generator.

NEW TURBOCHARGER, driven by engine exhaust, utilizes energy which would otherwise be lost. Packs air into engine according to engine load, not speed. Delivers more working HP—greater performance.



NEW, BIG WIDE-SECTION 20.5-29 TIRES, developed after 3 years of Caterpillar and tire manufacturer research on actual earthmoving jobs, operate at lower pressures and provide greater flotation and traction.

LARGE AREA PUSHBLOCK gives better pusher contact, faster loading.

More power, bigger capacity in the new DW20-DW21 TRACTORS



THE NEW FOUR-WHEEL CAT® DW20 Series E with new No. 456 LOWBOWL Scraper. Also available with the new W20 Wagon; capacity—20 cu. yd. struck. The new two-wheel DW21 Series C is available with the new No. 470 LOWBOWL Scraper.

In the DW20 Series E and DW21 Series C, Caterpillar offers you two new tractors and matched scrapers with exclusive LOWBOWL design.

Replacing the DW20 and DW21, world-famed earthmoving pace-setters, these new machines are built to deliver a new standard of money-making performance.

Their new LOWBOWL design utilizes maximum tractor and pusher power for bigger loads, faster loading times. Their greater power means faster cycles.

For complete facts, see your Caterpillar Dealer!

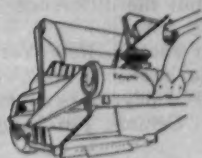
Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NEW DW20-DW21,
LATEST EXAMPLES OF
LEADERSHIP IN ACTION**

OF THE NEW DW20-DW21



INCREASED HIGH APRON LIFT provides faster ejection of any material.

INCREASED SCRAPER GROUND CLEARANCE enables units to work even under extremely "soft" conditions.

HIGH SPEEDS FOR FAST HAULS

DW20 Series E, 2.8 to 32.1 m.p.h.
DW21 Series C, 2.3 to 20.5 m.p.h.

CHOICE OF STARTING METHODS, optional 24-volt direct electric or gasoline starting engine with 6-volt starting motor.

AUTOMATIC CABLE SAVER, standard equipment.

PLUS IMPROVED BRAKE CONTROL, more easily removed DW20 hitch arrangement, better protected DW21 hydraulic steering system and many other new and thoroughly tested Caterpillar features.



LOW HEADROOM presents many hazards to workmen. Safety is big problem for contractors.

Low road or high road

THROUGH
THE
CORN
FIELDS



OR

THROUGH
THE
MOUNTAINS



MOTO-PAVER SPEEDS THE JOB—CUTS THE COST

Whether your road jobs are mostly in flat, level country or in mountain areas, Moto-Paver can help you *get* more work—and *do* more work—because it will enable you to speed the job—do more work with less help—and cut the cost. Moto-Paver uses sand, gravel, crushed stone or slag aggregates and various bituminous materials including tars, cut-back asphalts, road oils and emulsions. Road speeds up to 25 mph. make possible quick moves from one job to another. Standard and heavy duty models for all types of resurfacing jobs and all kinds of operating conditions. See your H & B distributor or write for Bulletin MP-55.

HETHERINGTON & BERNER INC., Engineers—Manufacturers
735 Kentucky Avenue Indianapolis 7, Indiana

For this purpose, overtime is figured at straight time. During the year, you pay the set premium on your employees' total salary, even though it may be more than an average of \$100 a week.

At the end of the year, the auditor for the insurance company checks your books to see that you have paid at least the minimum you should have been paying.

Do not assume that the auditor or his insurance company will automatically reimburse you the amount of over-payment to which you are entitled. The only reason the auditor checks your books is to see that you have paid enough. If you are to receive your just return, and it might be a considerable amount, you have to file for it just as you file for an income tax return. The Internal Revenue Bureau does not notify you that you have a return coming. You must ask for it. This also is true of Workmen's Compensation over-payments.

I know of specific cases where a contractor neglected to file for his over-payments. By not doing so, he was throwing away several thousands of dollars a year.

Another confusing aspect of Workmen's Compensation is classification according to the risks the workman faces in the performance of his job. Classification is important because it determines the amount of premium to be paid.

Job Classification

In some states jobs are easy to classify because the variety of classifications is limited. A steel worker on a bridge job, for instance, is in a higher premium classification than a carpenter on a housing project. It is easy to see the risks vary. Therefore, the premiums are going to vary.

However, in other states—New York is a notable example—it may be a question of the type job, where the job is being performed, or other fine-line considerations. There are different classifications of concrete work in New York. On a building job, men working on the basement or first floor are covered under "Cement Finishing," and men working above the second floor must be covered under "Concrete Construction." The difference may seem trivial, but the difference in the premium is not.

The present rate in New York for "Concrete Construction" is \$6.00 per \$100 of payroll per man. The rate for "Cement Finishing"

is \$3.20 per \$100 of payroll. On a big job this can be an enormous consideration.

I believe that there are times when a broker, if he is given enough information about your operations, can reduce the premium you will have to pay without reducing your coverage. Since the difference in many classifications is marginal, a broker with a good construction background and a knowledge of a particular job, may be able to obtain lower premium classifications than is normally expected. It should be remembered that while the differences in classifications may be marginal, the differences in premium definitely are not.

Road building also is subject to some fine-line definitions of classifications and again the difference

require extensive earthmoving or blasting, you will be hit with the highest classification. The difference in the premium for the various classifications must be considered before you arrive at a bid figure. It may have a direct bearing on the amount of profit you are going to make on a job.

I strongly advise that questions of classification, or any other debatable point concerning any type of coverage, should be brought up with the insurance company before you sign a contract for a job. When you discuss differences before you

actually assume responsibility for a job, you are in a much better bargaining position with the insurance company. After you have signed the contract and assumed responsibility, the shoe is on the other foot—your bargaining position is considerably weakened. This holds true no matter what the policy. Debate before you have the job, not after you have assumed responsibility by signing the contract.

* * *

The second article in this series will appear in the November issue.



STEEL ERECTION is one of the most hazardous construction operations. And that's why insurance costs are often high.

in premium payment is substantial. There are three basic classifications for road work: 1) resurfacing 2) sub-base and road, and 3) blasting and bridge or overpass work.

It is important that you have a clear-cut understanding with the insurance company of just what work you are actually doing. If you are a prime on an airport job, for example, and sublet the sub-base work, you may be entitled to the lower classification because yours is practically a resurfacing operation. If your job is going to



LOW COST PORTABLE HEAT saves time and money for contractors

For only a few cents an hour in fuel, you can dry plaster, fast, even on cold or humid days; pour and cure concrete safely at any temperature and keep men working, inside or out, in freezing weather. That saves hours of time . . . and time means money.

Your Master Heater rolls into place, starts at the flip of a switch. You don't need a vent. Three models put out 100,000; 160,000 or 400,000 BTU's per hour; burn inexpensive kerosene or fuel oil.

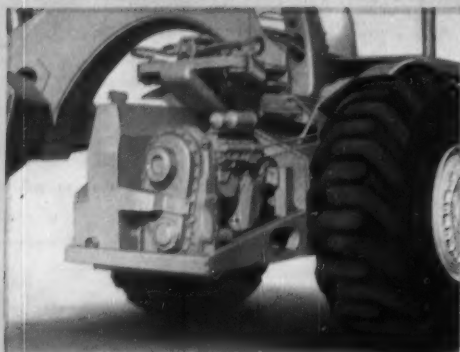
The low price is repaid time after time in hours saved and workmen working.

Write for full information or see your Master distributor.

MASTER VIBRATOR COMPANY
347 Stanley Ave., Dayton 1, Ohio

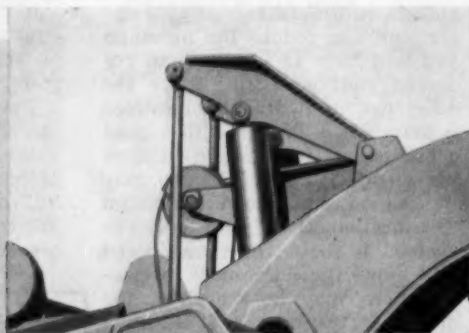
MASTER

MORE WORKABILITY WITH



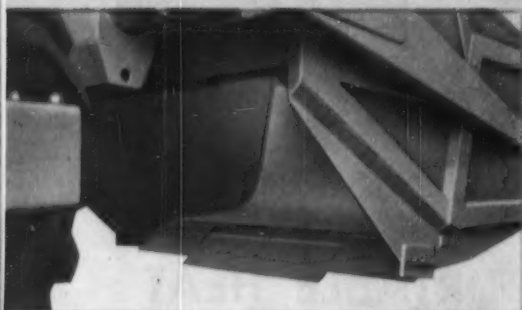
ACCESSIBILITY

Accessibility of major components is a cost saving feature of these two new Euclid Scrapers. Easy servicing and maintenance means more working time and more payloads per day. Engine, transmission, drive axle and entire hydraulic system can be serviced or replaced in about half the time required on other scrapers. Illustration shows accessibility of the Torqmatic Drive in the 5-18 Scraper.



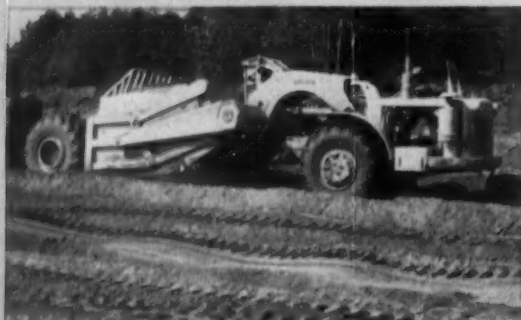
ADVANCED DESIGN

Euclid's advanced design does away with cable headaches—costly downtime for replacement and repair. All scraper operations . . . bowl, apron and ejector . . . are actuated by husky levers with independent hydraulic control. They're fast and positive . . . not interconnected in any way. All four hydraulic jacks are interchangeable . . . one spare fits anywhere!



CUTTING BLADES

The cutting blade is another reason you can count on lower maintenance costs with "Euc" Scrapers. All four sections are identical and reversible. By using a straight or drop center blade arrangement you get the most efficient loading under any job condition. Reversing or interchanging the sections . . . a very easy operation . . . provides a completely new cutting edge.



The 5-12 has plenty of power and traction to pick up heaped loads in a hurry, even in sandy conditions like this.

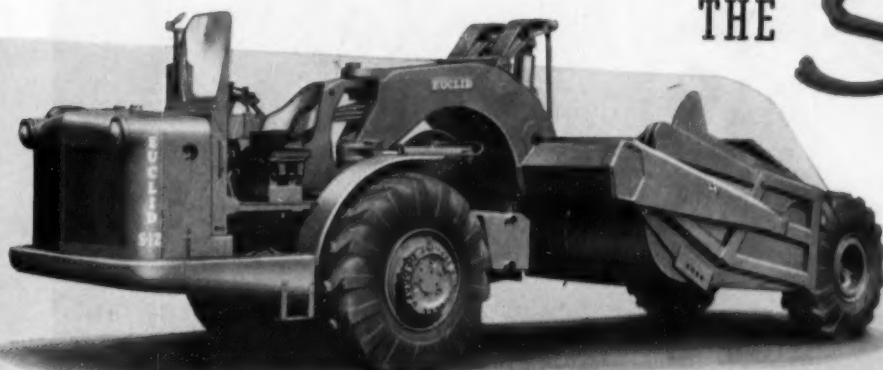


With Torqmatic Drive and 300 h.p., the 5-18 hauls heaped loads up to 24 cu. yds. at fast travel speeds . . . dumps on the fly.

*Performance
that gets
More Work Done!*

NEW "EUC" SCRAPERS

THE S-12



12 yds. struck ...

14 yds. at 3:1 slope ... 16 yds.
heaped at 1:1 ... 26.5 x 25 tires
... 218 h.p. ... top speed
loaded of 28 mph. ... 9' 6"
width of cut ... makes
non-stop 180° turn in 31'.

AND THE

S-18

These two new Euclid Scrapers bring you a new high in scraper performance and low cost yardage. Both incorporate the advanced design that have made "Euc" Scrapers the fastest growing line in the industry. With lever action and 4 section cutting blades, and 16 to 18 h.p. per yd. of capacity, they load easy and travel fast. The entire power train of the S-12 and the S-18 is designed for exceptionally good accessibility.

Before you decide on any scraper for your present or future work, check the money saving features of these "Eucs". Your Euclid dealer will be glad to give you facts and figures that show why so many users have found that *Euclids are your best investment.*

18 yds. struck ...

21 yds. heaped at 3:1 slope ... 24 yds.
heaped at 1:1 ... 27.00 x 33 tires
... 300 h.p. ... Torqmatic Drive with
torque converter and semi-automatic
transmission ... top speed of 20 mph
with full payload ... 10' width of cut
... makes non-stop 180° turn in only 36'.

EUCLID DIVISION

GENERAL MOTORS CORPORATION

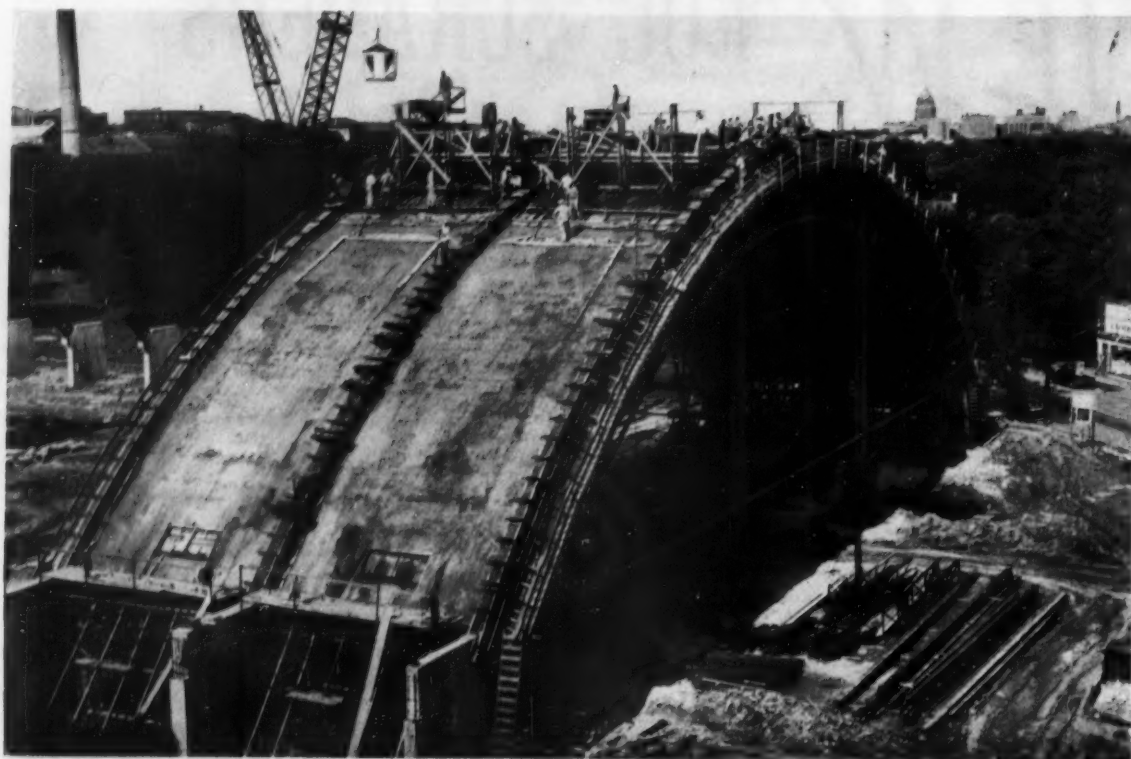
Cleveland 17, Ohio



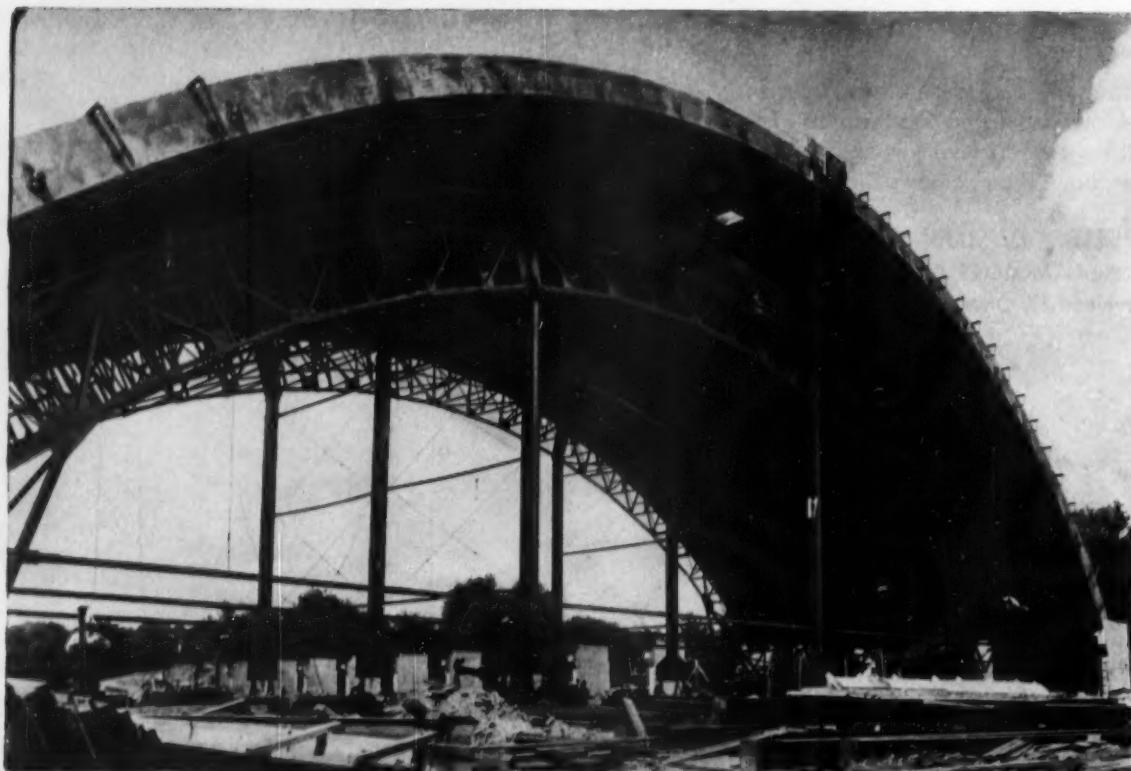
Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

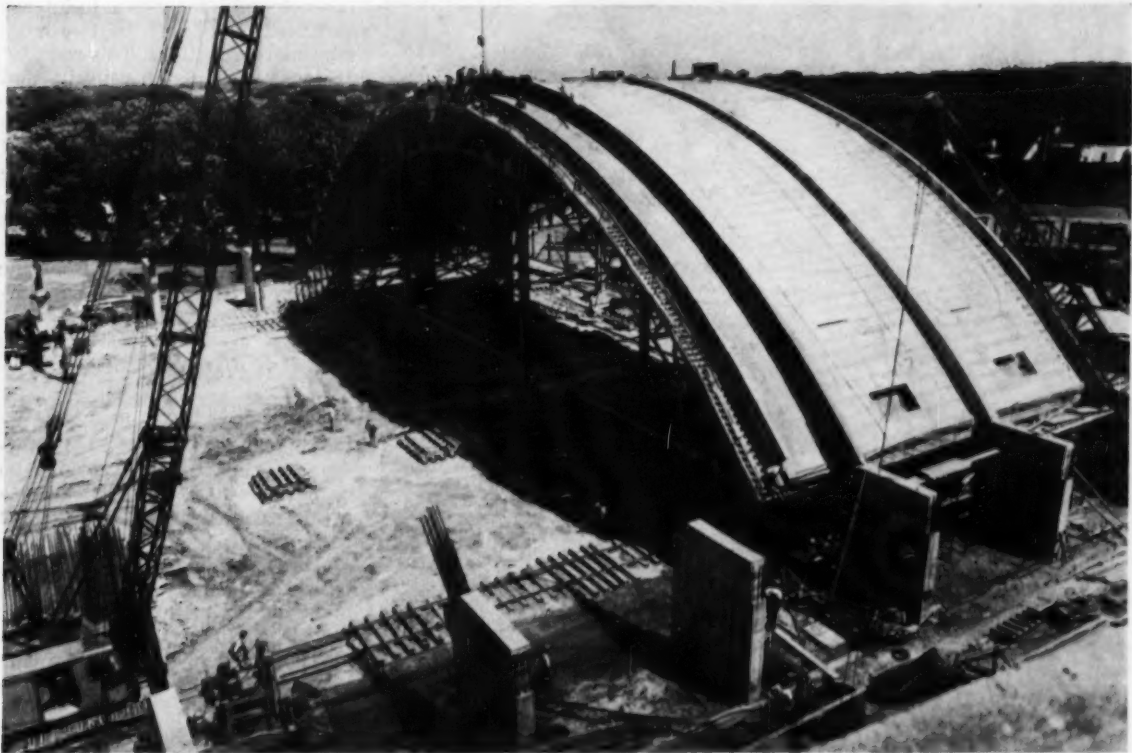




Three-Span Falsework Trusses ...



... Convert to Tied Arches for Moving



STEEL TRUSS FALSEWORK moves in 5-ft stages to second pouring position. Because intermediate columns are hung from the trusses

during moving, falsework needs tracks only under its heels. Thin-shell design requires precise control of falsework.

THREE STEEL TRUSSES are the key to a fast, economical falsework system for a new thin-shell concrete arch building in Wisconsin. Their initial cost is high, but they more than pay for themselves in mobility, accuracy, speed and safety.

Big advantage is in the traveling. The falsework unit is moved ahead seven times to pour the 400-ft long barrel-vault structure. And it takes a minimum of effort to do it.

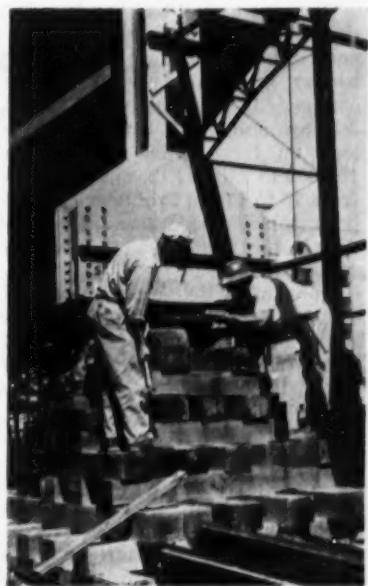
During a pour, each of the three arch trusses comprising the falsework is supported at its third point on columns. This makes each arch truss act as three simple trusses. But when the falsework is de-centered, the trusses are converted to tied arches, and the unit moves ahead with the six columns suspended underneath.

It's a fast operation. The falsework is de-centered, moved ahead and reset on cribbing, wedges, and jacks in less than 12 hr. The method eliminates the four or six tracks normally required to carry the conventional forest of falsework needed on this type of construction. In addition, it provides precise control of arch-truss centering, a major factor on thin-shell work, and reduces working hazards.

Selecting the best type of falsework was a tough problem for the contractor, V. L. Simmons Co. of Chicago. Maximum permissible variance from the theoretical axis of this 3-in. shell-type arch span is only $\frac{1}{4}$ in., and ribs project above and below the shell. Simmons studied several methods including wood arch, wood post, steel-post type, tubular steel scaffold and steel arch-type falsework to be supported on heavy timber cribbing. They found that the best type would be steel-truss falsework and turned the design job over to engineers of the Blaw-Knox Co.

Working with Ammann & Whitney, Blaw-Knox designed structural steel falsework for the 200-ft wide roof arch which would be reused seven times. The horizontal span of the falsework is 200 ft, and the depth is 57 ft 4 in. It provides a form for one full rib and two half ribs connected by the 3-in. thick shell. The ribs are on 28-ft 8-in. centers, and the 57-ft 4-in. section is poured as an integral unit starting at each spring line and working toward a joining at the crown of the arch.

Falsework consists in basic design of three continuous 8-ft deep



WEDGES UNDER COLUMNS are removed so that jacks can be lowered and falsework moved. Cribbing distributes load to ground.

welded arch trusses, one truss to support each of the three heavily reinforced concrete ribs. The heels of the arch trusses are supported on each side by a pair of 15-in. channels spaced 3 ft apart and



TRUSS HEELS RIDE on tracks as winches pull falsework forward for second pour. Heels are supported on pairs of 15-in. channels. Decentering, moving and resetting take 12 hr.

laced together. Each pair of channels, in turn, is supported by six Buda worm-gear jacks, two jacks under each heel point.

To serve as soil bearing foundation support for this steel column and arch-truss framing, 12 heavy timber cribs are placed on the compacted clay subgrade at all column and heel locations. The load on these cribs varies from 100,000 to 240,000 lb, and requires from 70 to 160 sq ft of bearing area because soil bearing values available in this filled area are less than 1500 lb per sq ft.

In ordinary tied arch bridge centering designs, intermediate columns are not usually required, but in this case they were necessary to support properly and control accurately elevations at all levels of the thin shell arch concrete and to comply with a previously established sequence for stripping the forms.

However, in moving the falsework, the intermediate columns are not required to support the load of the formwork. It was much more economical to convert the falsework to a tied arch, thereby eliminating additional sets of steel rail track otherwise required for the central columns.

When pouring, the central columns are supported by jacks. The cross-ties on the centering are loose so that the load is carried by

the six center columns and six outside points of support.

When the falsework is stripped, it is necessary to throw the concrete into compression. This is done by carefully lowering the worm-gear jacks $\frac{1}{4}$ in. at a time at each of the central supports until the jacks begin to unload. As this happens, the crown curve of the concrete arch and steel falsework flatten together and the concrete arch is thrown into compression. The arch deflection at de-centering is due almost entirely to rib shortening, the dead load moments being quite small. The resulting deflections vary from zero at the buttresses to a maximum at the crown, and all are downward. Without the central steel column falsework supports, other more expensive and less certain means of control would have been required in order to place the concrete arch in sequential compression.

A total of 24 Buda Jacks with 14-in travel support the six intermediate columns essential to close control of stripping. Decentering distance is 20 in., requiring two lowering operations for each jack. To guard against possible slippage of the jacks and to permit jumping, heavy oak wedges are maintained directly under each of the 12 points of support.

The 75-ton jacks support the columns and channel under the full

concrete rib. Fifty-ton jacks are sufficient to support the two half-rib concrete sections. This requires 16 jacks with 50-ton capacity and eight with 75-ton.

The rest of the formwork consists of $\frac{3}{4}$ -in. plywood supported by 2x12 joists laid parallel to the longitudinal axis of the building. The joists are supported at 10-ft intervals by heavy timbers previously cut to the contour of the concrete arch soffit. These contoured timbers are bolted directly to the steel centering stringers.

Arch Ribs Project

The concrete arch ribs project $11\frac{1}{2}$ in. below the underside of the thin shell concrete roof deck which spans between the ribs. The soffits or bottoms of the rib beams also are formed with $\frac{3}{4}$ -in plywood fastened directly to the top edges of three contoured 2x12 timbers, which are supported at the panel points of the main centering trusses. The full rib cross-section measures 20x46 in. at the spring line, tapering to 20x30 in. at the crown.

To compensate for vertical and longitudinal action of the roof, a $\frac{3}{4}$ -in. fibrous material is inserted between the half-rib of one pour and the half-rib of the next. This material provides for:

- (1) Deflections of the arch and centering during the pour.
- (2) Further deflections of the arch as the forms are stripped.
- (3) Continued deflection until the concrete arch has attained final strength.
- (4) Deflections due to temperature change.

Actual construction of footings and foundations of the building began late in 1954 shortly after the owner's final approval and acquisition of the site. Heavy grading work started with the moving of some 25,000 yd of dirt. A 6-ft cut was required at the north end of the site and 6-ft fill at the south.

Each buttress rests on a continuous main pad 7 ft wide by 3 ft deep, sloped 18 in. in 7 ft to carry the horizontal component from the arch thrust, and on a smaller 3x3-ft continuous pad at the inside face of the buttress.

A total of 3,500 cu yd of concrete went into the buttresses and pads. A single pour formed each foundation footing unit, and an additional pour was made for each buttress. The foundations and buttresses were reinforced with 250 tons of reinforcing steel. The shell

(Continued on page 82)



**TOUGH POWER...
SMOOTH CONTROL**

Designed for maximum application of power . . . as a dozer or loader. Either 67 $\frac{3}{4}$ " or 71 $\frac{1}{4}$ " track length on ground.

Oliver OC-12 Crawler Tractor . . . *prominent wherever earth is moved*

Dozing, scraping or loading, this versatile machine seems to be happiest when the going is roughest. The OC-12 has many features which contribute to easy handling and economical upkeep. There's a choice of gasoline or diesel engines; standard or wide track; and optional, specially designed equipment.

Smooth lubrication too!

Shell lubricants are used and recommended by The Oliver Corporation. As they say it,

"Shell Oil Company has had a great deal to do with the fine performance of our lubrication system in this tractor and in many others of our line."

Shell Products are made to up the performance of heavy-duty equipment. We invite you to put them to competitive test.

Shell Products used and recommended by Oliver include: Shell Tracrol Lubricant, Shell Rotella Oil, Shell Retinax A Grease and Golden Shell Motor Oil.

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA





RAPID PILE DRIVING, using a 50-foot swinging lead and No. 1 Vulcan steam pile driver, is one of the many jobs handled efficiently by an American 700 Series Crawler Crane on two Indiana State Highway bridges. Crossing the Patoka River, one of the bridges will be 192-feet long; the other will be a 7-span, 480-foot structure. The steel

beam bridges are on 24-foot concrete piers which rest on 36 creosoted piles averaging 60-feet in length. After driving the piles, the American 700 Series Crawler Crane will be used for placing concrete and setting steel . . . all with a minimum of down time . . . thanks to the speed and ease with which boom sections can be changed.

Indiana Contractor Reports:

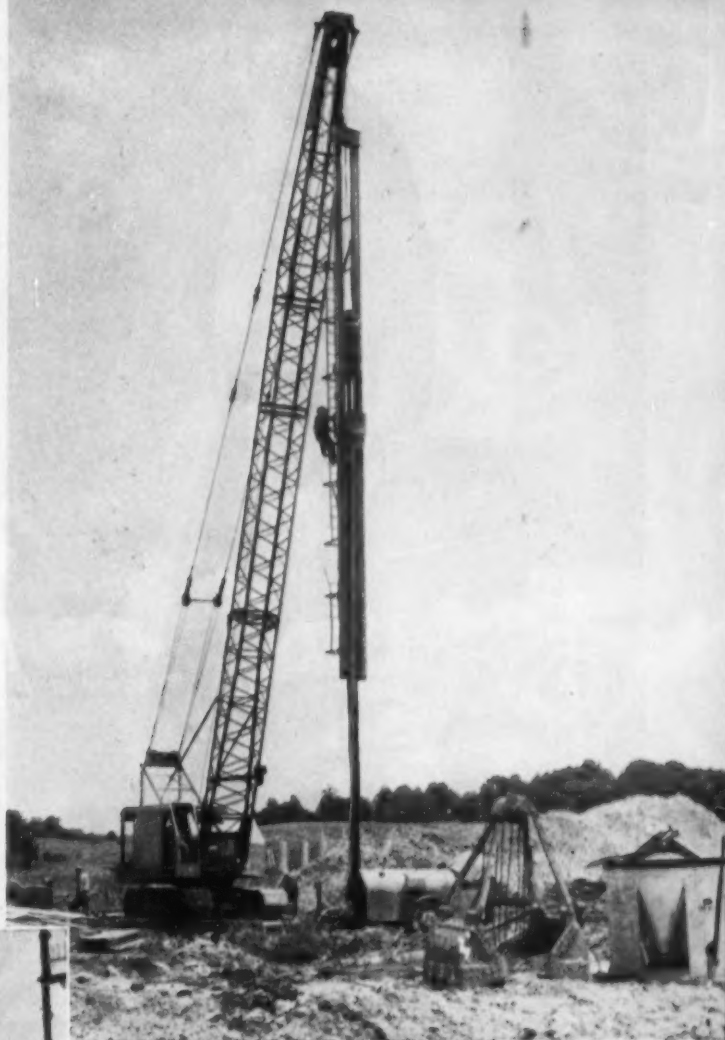
CHANGES BOOM SECTIONS FASTER WITH AMERICAN

In building two bridges, 5 miles east of Princeton, Indiana, G. H. Allen, Contractor and Engineer, needed a big husky crane that could be adapted quickly and easily to handle many different jobs—driving piles, handling and setting steel, and pouring concrete. A new American 700 Series Crawler Crane provided the

contractor with the flexibility he needed. The ease with which the American's boom sections can be changed for various assignments reduces down time considerably. John Walker, crane operator for 30 years, says, "I change boom sections, faster with less down time on the American than with any rig I've ever been on!"



FINGER TIP AIR CONTROLS on the American 700 Series Crane make jobs a lot easier for operator John Walker. Instead of tugging at hard-to-operate mechanical levers, he gets faster action and higher production with American's air controls and he has a sensitive "feel of the load" at all times. John, who broke in on steam rigs 30 years ago, says the American's Air Controls are "the real thing".



SETTING UP TO DRIVE a 60-foot long creosoted pile for one of the bridge's piers, the American 700 Series Crawler Crane operates from a heavy timber mat made necessary by soft, swampy ground. The American's built-in stability, wide, rugged base, and evenly-distributed weight, enable it to maneuver and to turn out a top day's production even under difficult terrain and soil conditions. For long life and protection, the American Crawler Crane's travel gears are completely enclosed in a cast steel housing and run in a constant bath of oil.



SPEED, PINPOINT CONTROL are but two of the outstanding features of this engineering marvel—a 100-foot level luffing crane developed by American engineers to handle speedily military cargo from ten tons to ten pounds on a single hook. Increased speed in handling loads with a minimum use of power is made possible through "level luffing"—a feature which keeps loads level after they are lifted regardless of how the crane moves. Lifting, leveling, swing and travel operations are all hydraulically operated. The engineering "know-how" that goes into the design and production of such an efficient crane is a result of American's 78 years of experience making heavy equipment for the world's biggest and toughest jobs. This same engineering background is evident in American Crawler and Truck Cranes. For detailed, factual information on how American Cranes can help you cut costs and increase production, see your American Distributor, or write American Hoist & Derrick Co., St. Paul 1, Minnesota.

LOAD



Tractor mounted. New claw-action feeder with automatic release. Ten-foot discharge height. Eight-foot boom overhang. Self-propelled at 10 m.p.h.

LOAD economically with the new Barber-Greene 550 Windrow Loader.

LOAD rapidly up to 4 cu. yds. per min. of earth, sand, loam or similar material, even leaves, or load snow up to 7 cu. yds. per min.

LOAD continuously at capacities that keep ahead of all trucks normally available.

LOAD easily with fast maneuverability. Turning radius: only 8'6". Simple to turn around in a limited area.

LOAD like this: . . . 158 4½-yard trucks loaded with sand, loam and gravel in a 6-hour day . . . or 200 4-yard trucks loaded with moist sand and clay bladed from street surface in 9 hours! Here's real on-the-job loading efficiency.

Let us show you how a Barber-Greene Windrow Loader can cut costs for you

54-44-WL

WRITE for
INFORMATION

descriptive literature . . . sound movies
cost studies . . . nearby job inspection . . . plant layouts

Barber-Greene

AURORA, ILLINOIS, U.S.A.

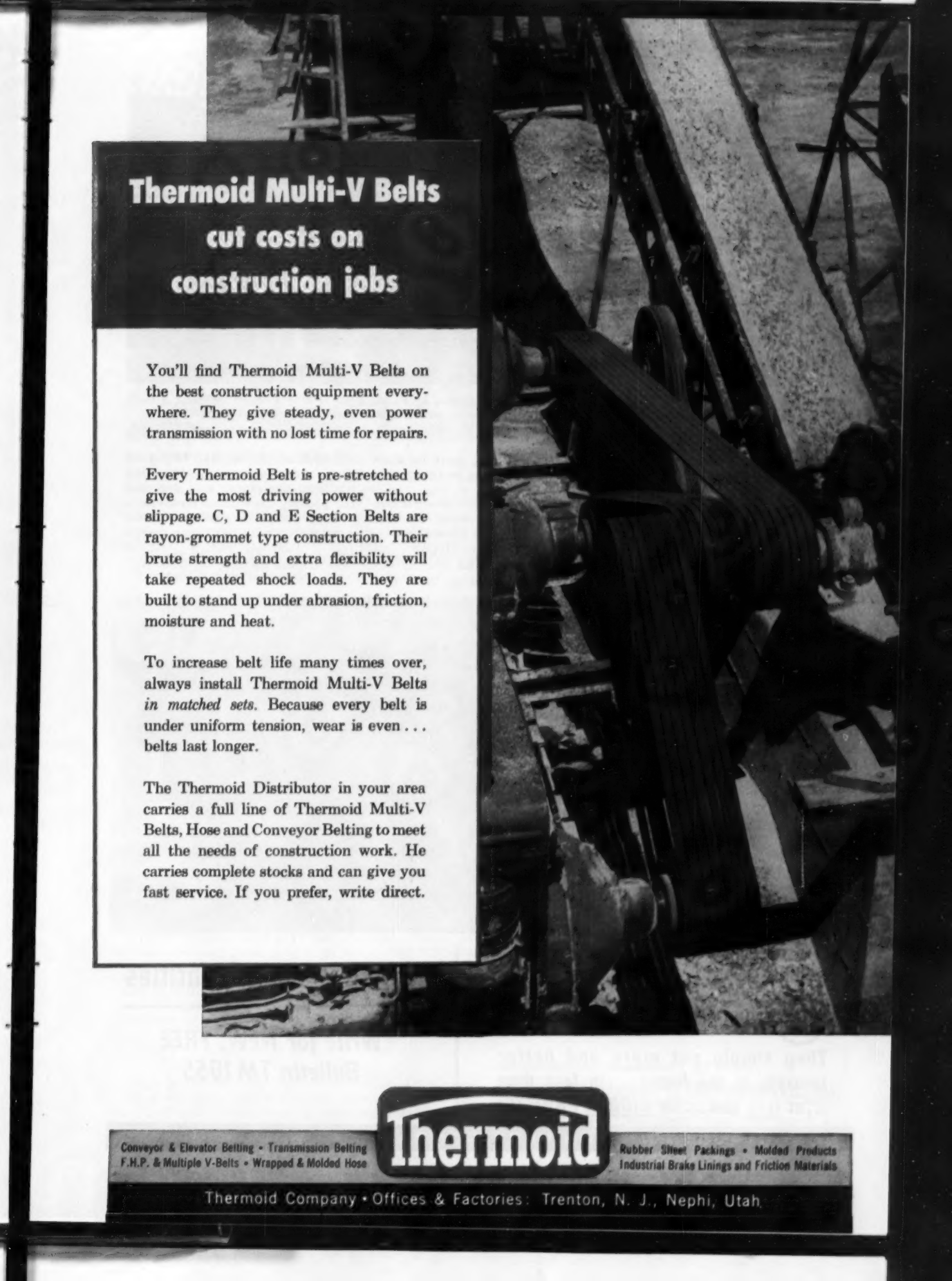
CONVEYORS

LOADERS

DITCHERS

ASPHALT PAVING EQUIPMENT





Thermoid Multi-V Belts cut costs on construction jobs

You'll find Thermoid Multi-V Belts on the best construction equipment everywhere. They give steady, even power transmission with no lost time for repairs.

Every Thermoid Belt is pre-stretched to give the most driving power without slippage. C, D and E Section Belts are rayon-grommet type construction. Their brute strength and extra flexibility will take repeated shock loads. They are built to stand up under abrasion, friction, moisture and heat.

To increase belt life many times over, always install Thermoid Multi-V Belts *in matched sets*. Because every belt is under uniform tension, wear is even . . . belts last longer.

The Thermoid Distributor in your area carries a full line of Thermoid Multi-V Belts, Hose and Conveyor Belting to meet all the needs of construction work. He carries complete stocks and can give you fast service. If you prefer, write direct.

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Thermoid

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

Thermoid Company • Offices & Factories: Trenton, N. J., Nephi, Utah



EIGHT SASGEN WINCHES pull pouring platform up each side. Winches are mounted in tandem on the crown of the arch and powered by electric drills. To keep platforms horizontal, a single switch on each platform controls a pair of winches.

roof, rib and edge beams are reinforced with 210 tons of steel.

With the 15 buttresses on each side in place, a crew of 10 ironworkers with two cranes erected the 150 tons of steel falsework in approximately 25 working days. Wood lagging and decking and beam sides then were placed. These

were erected in 30 working days by 10 carpenters and two carpenter foremen.

With the forms and falsework in place, Cermul M form oil was applied, reinforcing placed, inserts for walkways, ventilation and lighting were set and pouring began. For concreting up these roof

slopes from spring line to top of arch, adjustable-pitch traveling platform equipment was designed for pouring crews and finishers.

Two pairs of platforms were constructed with each pair carrying a 1-cu yd radial-gate-type floor hopper suitable for discharging. (Continued on page 87)



It's no secret why more and more fleet owners are standardizing on

TRANSCRETES®

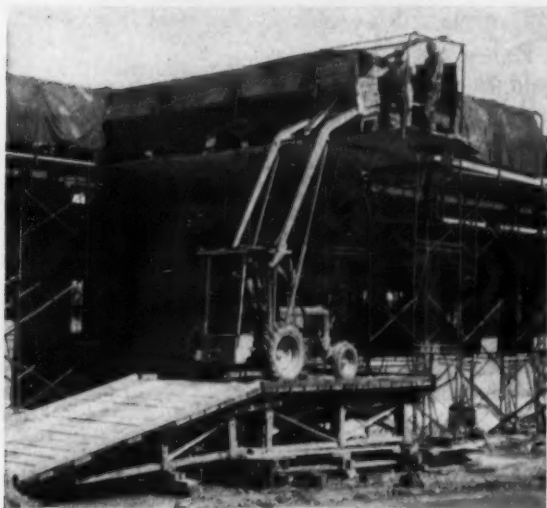
They simply put more and better concrete in the forms ... in less time ... at less cost ... for BIGGER PROFITS!

3½ to 7 Yard Capacities

**Write for NEW, FREE
Bulletin TM 1055**

CONSTRUCTION MACHINERY COMPANY • Waterloo, Iowa

Scaffolding Methods . . . by Patent Scaffolding Co.

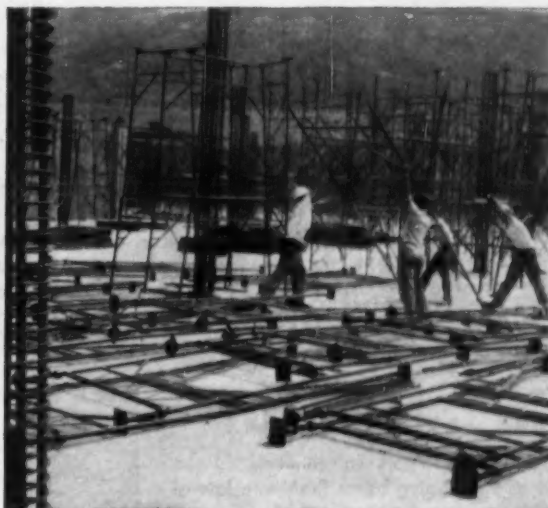


THE MECHANIZED WAY — Extra-wide "Trouble Saver" Sectional Scaffolding and a tractor with front-end loader and fork lift show how mechanization cuts masonry material handling costs on the Frontier School, Town of Hamburg, N. Y. Tractor lifts palletized brick up to scaffold where it is distributed to masons on brick buggies. Scaffold platform width is increased with 20-in. brackets to allow ample room for maneuvering brick and mortar buggies. 30-in. brackets on wall side give masons a clear working platform. Seigfried Construction Co., general contractor.

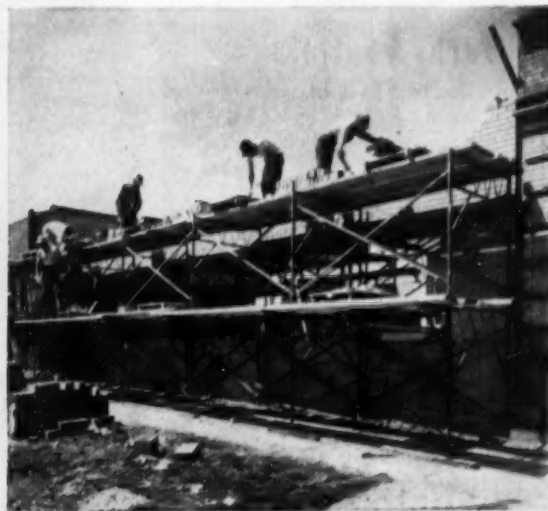


THREE 'BARROWS WIDE — Three wheelbarrows, two of mortar and one of brick, go up at one time on this 65-ft. "Trouble Saver" Sectional Hoist Tower in use on new apartment building in Fort Lee, N. J. Tower is lightweight, yet has a load capacity of 4,000 lbs. It is quickly erected from just four component parts: one-piece base unit, prefabricated steel end frames, braces and girts. End frames are quickly locked together.

To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.



UP SHORE — Pre-assembled "Trouble Saver" Sectional Steel end frame units, in foreground, are raised after crossbraces have been attached for shoring job at the Broadway-Hale department store warehouse, Los Angeles. C. L. Peck Inc., general contractor, is using 6,000 of these frames plus 800 single-post Burton Shores to shore the 277,400 sq. ft. second floor slab. Frames were erected for one-third of the area at a time to support forms for 8" mushroom-type slab.



SMALL JOBS, TOO — "Trouble Saver"® Sectional Scaffolding can be used to advantage on any size masonry job. For instance, on this typical small job in Chicago, General Contractor C. A. Klooster uses 60 5-ft. high "Trouble Saver" frames to keep both men and materials in efficient working position. 20-in. sidewall brackets, normally on wall side for mason's platform, are used here on the outside to support platform for handing up masonry materials.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. CM&E Long Island City 1, N. Y.
West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.

Branches in all principal cities. In Canada: 355 Dufferin St., Toronto

ladder-type Trenchliners

**dig 16 inches
to 6 FEET wide**

Parsons ladder-type Trenchliners,
in 3 heavy-duty sizes, cover a wide range
of trench widths and depths. For example
... maximum cutting widths are 36, 42 and
72 inches, depending on model ... with
digging depths of 8½, 12½, and 17 feet.
In addition to big work capacity, notice
the many production boosting advantages
you get when you put one of these Trench-
liners on your job ...

make vertical set-ins

Reverse traction lets Trenchliner hold the
end of the digging boom flush with lateral
ditch or against foundation wall ... main-
tains a vertical face all the way down to
bottom of trench.

undercut sidewalks

Sloping ladder-type boom reaches far under
sidewalks from both sides ... also
undercuts curbs and gutters, cross pipes,
and existing mains. Saves hand work.

hug curbs, buildings

When working next to curbs, fence rows or
buildings, boom is shiftable across full width
of carriage ... digs behind either crawler.
(Model illustrated cuts within 10 inches of
side obstructions.)

dodge poles

Spoil conveyor shifts through Trenchliner
by power in less than 1 minute to dump
right or left ... side-steps poles, trees
without swerving from grade line.

load trucks

Arc-type spoil conveyor reaches up and
out, loads into trucks. Discharge heights
range from 6 ft.-4 in. up to 8 ft.-9 in., de-
pending on model.

All these big production advantages are
available to you in 3 sizes of ladder-type
Trenchliners. Ask your Parsons distribu-
tor about the size best suited to your work.
Also: 2 wheel-type Trenchliners, and small,
rubber-tired Trenchmobile.®



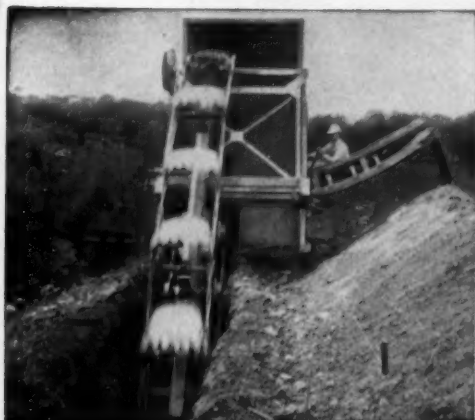
PARSONS Trenchliners

PARSONS COMPANY, NEWTON, IOWA

(Kochring Subsidiary)



C9428



221 Trenchliner cuts 16 to 36 inches wide, at depths to 8½ feet. Shiftable boom digs as efficiently behind either crawler as it does in center position. Power-shift conveyor gives controlled discharge . . . puts spoil bank well back from edge of the trench.



250 Trenchliner digs 16 to 42 inches wide, at depths to 12½ feet . . . has ample truck-height discharge. On loader-type Trenchliners, spoil conveyor is independent of digging boom, maintains constant discharge height regardless of position of boom.



Dig 310 Trenchliner, shown here with dual booms, has 6-foot cutting width, and 12-foot depth. When used with single boom, it digs 16 to 54 in. wide, 17 ft. deep. Buckets and side-cutters on all Trenchliners equipped with Parsons easy-in, easy-out "Tag-In" teeth.

Bituminous mixer loads trucks, does stockpiling

Kwik-Mix bituminous mixers fit any production problem. Tower loader attachment gives discharge height up to 8¾ ft. Or, with skip extension track, mixer can be mounted on skids on elevated platform. Pug-mill mixing action, accurate heat control, and even bitumen distribution assure high quality mix. 2 sizes: 10 and 14 cu. ft. Also check Kwik-Mix concrete, plaster-mortar mixers, and Moto-Bugs® with hopper, platform, and fork lift.

KWIK-MIX • Port Washington, Wis.
(Koehring Subsidiary)



Portable batch plant or cement transfer plant

Easily moved and erected by standard dump truck, Johnson Elevating Charger sets up anywhere. As a batch plant, it has a 1000-lb. cement weigh batcher, hung under a 33-bbl. overhead storage hopper. Or, to charge dual-batch trucks, two 1000-lb. batchers can be used. It's easily changed to cement transfer plant by removing batchers, cone, and bolting a 50-bbl. extension section to the upper hopper. See your Johnson distributor.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)



Koehring ½-yd. hoe digs 17¾-feet deep

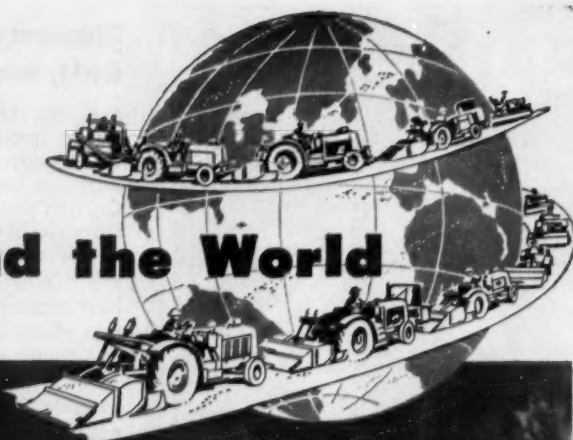
With long reach, Koehring ½-yard 205 hoe puts dirt far beyond edge of cut, or gives 8¾-foot clearance height to load trucks. Close-coupled dipper pulls up tight to the gooseneck boom, avoids spillage. Powerful cable crowd, fast line and swing speeds maintain big-yardage output. This heavy-duty 205 converts to ½-yard shovel, ½ to ¾-yard dragline or clamshell, 10-ton crane. On truck mounting the 205 has 15-ton lift capacity.

KOEHRING Company
Milwaukee 16, Wis.

T61



On YOUR Streets and Highways ... And all Around the World



The SEAMAN PULVI-MIXER Builds Better Bases at Lower Cost



Towns as small as 600 population — and of course cities with several millions of people, find the SEAMAN Mixer builds better bases for a lot less money. Townships with relatively few miles of road, counties and states with big highway programs depend upon the PULVI-MIXER as primary equipment.

And that's true in virtually all the free countries throughout the world. Why?

- The PULVI-MIXER mixes any suitable native material with any binder.
- It mixes in-place to cut material handling cost.

- It assembles the materials properly so that coarse aggregates and fines are perfectly blended. Segregation is eliminated. Voids are filled with fines to securely mortar-in the larger aggregates.
- It provides higher densities, higher load-bearing values — and cuts maintenance to a fraction.
- And it operates at the lowest cost per square yard in any stabilized construction.

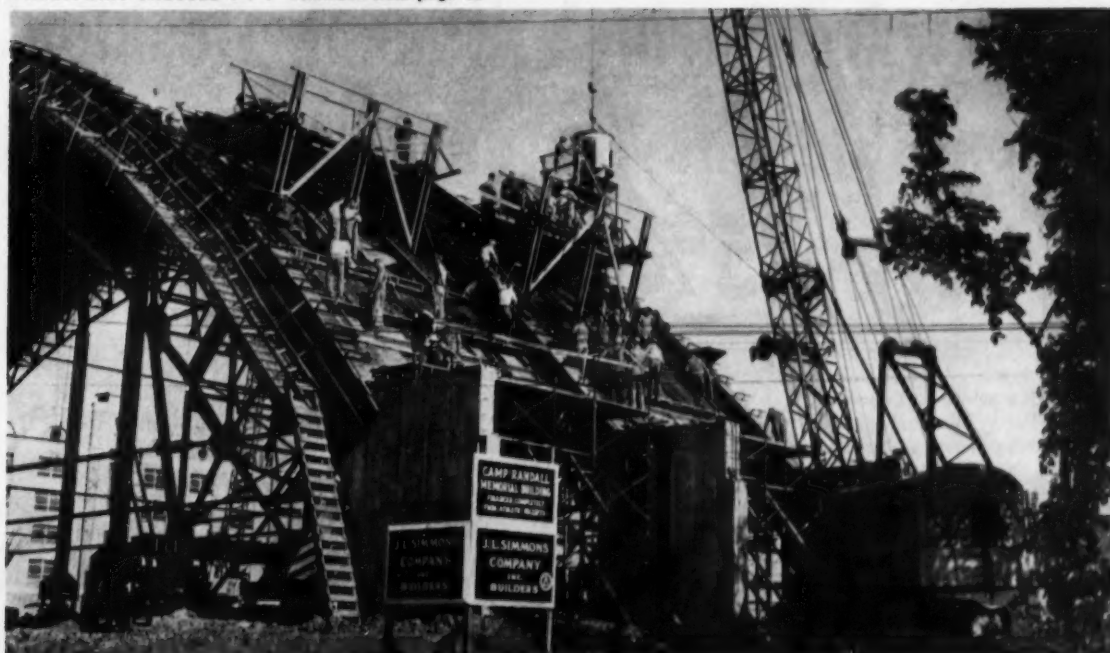
You'll find many more good reasons when you put a PULVI-MIXER to work in your street and highway projects. Call your SEAMAN distributor today.

The story of SEAMAN-mixing is told in detail with many job photos and diagrams. Just get "Bulletin TPS" on a postcard and mail it — today.



**SEAMAN-ANDWALL
CORPORATION**

280 NORTH 25th ST. MILWAUKEE, WISCONSIN



POURING PLATFORMS move up arch, as crane dumps concrete into hoppers to be distributed across section by buggies. Adjustable

hinged legs keep platforms level. Second set of platforms, pulled by first set, supports cement finishers.

ing concrete into rubber-tired buggies which distribute concrete across the 57-ft 4-in. width of the pour. These platforms are split in the center and elevated to such a height that planking can be laid from one to the other over the top of the center rib beam. Adjustable hinged legs on the platform under carriage permit variations in height of the outer edge of the working deck so that platforms remain level as they travel up the roof from spring line to crown of arch.

These platforms are pulled toward the crown by eight large Sasgen winches, electric-motor driven, mounted in tandem and located at four points along each side of the center line of the roof crown. To keep the platforms horizontal, the pairs of winches hoisting each platform are controlled through a single switch. Each switch is mounted on its respective platform close to the concrete foreman for easy control.

Connected by two cables behind each platform is a 4-ft wide screed extending full width of deck span between ribs. The screed serves as a strike-off unit and maintains the 3-in. concrete deck thickness. Behind the screeds is another set of platforms also suspended by cables from which cement finishers can perform their hand-float work.

Not counting this first pour,

which required a longer time for shakedown of equipment and men, the following six pours, of 240 yd each, necessary to complete the arch structure, are expected to require about 14 hr each.

Concrete is delivered to the job in Rex truck mixers and is dumped into 1-yd GarBro buckets located on either side of the arch. A Northwest 35-ton capacity crane with 100-ft boom and 20-ft jib and a 32-ton Insley truck crane swing the buckets over the concrete floor hoppers mounted on the traveling platforms.

Concrete for the arch is a 6½-bag mix designed to exceed a minimum cylinder compression test of 3,750 lb per sq in. in 28 days. The first pour was started with approximately 2½-in. slump, which was changed to a maximum of 3½-in. to increase its workability. The compressive strength of the concrete must exceed 2,500 lb psi.

Following de-centering, two of the Sasgen winches used to pull the concreting platforms up the crown during the pour are reset on the ground and used to move the forms forward on the two sets of previously laid tracks. The 200 tons of falsework is carried on four-wheeled trucks attached near each of the four corners.

A 3-ft wide steel framed catwalk, suspended some 6 ft below

the trailing edge of the falsework, provides a platform from which cement finishers can patch any irregularities on the bottom side of the arch as the centering is moved forward in 5-ft stages.

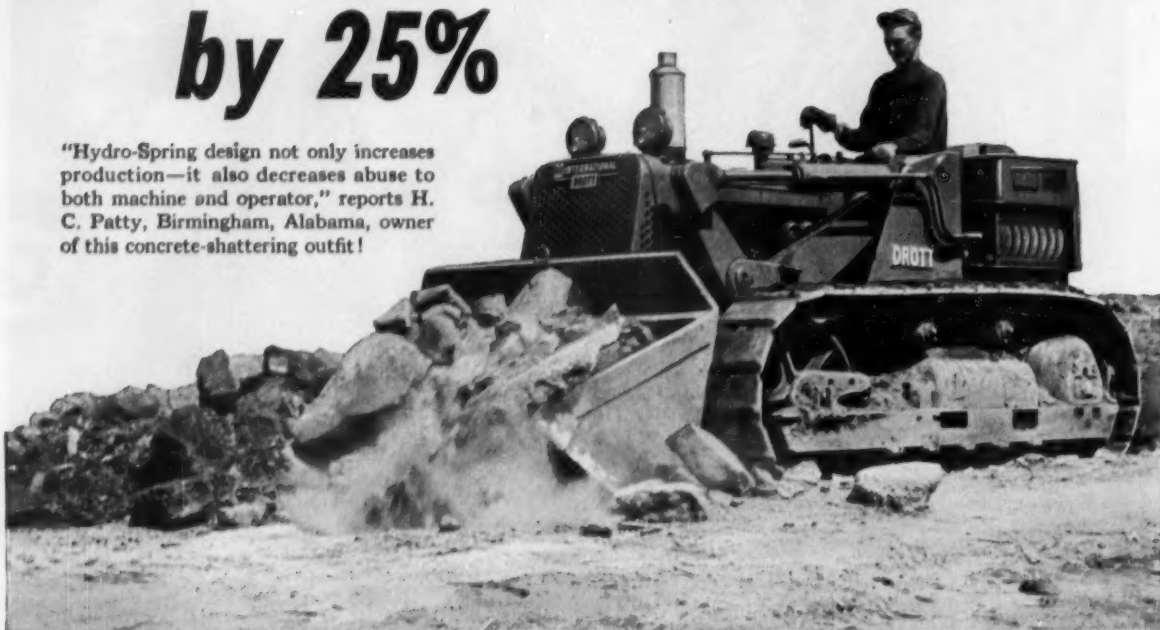
The interior of the \$1.5 million building will be finished with a dirt floor providing space for a 220-yd track, basketball court and other athletic facilities for the University of Wisconsin.

The ends of the building will be enclosed with steel curtain wall-type framing, with an especially formed pattern of aluminum siding on the exterior surfaces. The interior surfaces of these end walls are aluminum perforated acoustical panels backed by 1½ in. of Fiberglas insulation. The reinforced concrete framed bays along each side of the building are approximately 18 ft high and will be trimmed with random ashlar masonry to match the exterior walls of the University's football stadium to which the field house is connected by an enclosed corridor. The roof is built up by applying 2x4 nailing strips to the concrete shell on the day after the arch is poured, placing ¾-in. insulation between the nailing strips and finishing with five plies of felt. The last felt ply has a mineral surface.

Frank Miller is supervisor and Roy Chambers is field superintendent for J. L. Simmons Co.

How Hydro-Spring's "Shock Cushion" Helps Skid-Shovels outlast all others *by 25%*

"Hydro-Spring design not only increases production—it also decreases abuse to both machine and operator," reports H. C. Patty, Birmingham, Alabama, owner of this concrete-shattering outfit!



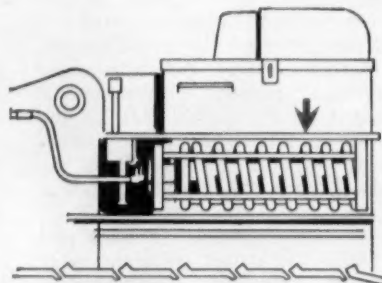
Slam this super-stout bucket into compacted material, and you generate impact stresses that make unprotected front-end loaders shudder!

But International Drott Skid-Shovels smother these shocks enroute, before they can sprain a sacroiliac, strain a track frame, or maim a final drive! Machine-mauling shock stresses "lean" against exclusive Hydro-Spring's "magic cushion"—and they're absorbed!

No Strain! No Pain!

You apply the patented pry-action break-out—and you get up to three times as much material-loosening, bucket-cramming force as the ordinary front-end loader can muster. Even then, shock-swallowing Hydro-Spring wards off strain and pain! Owners declare that Hydro-Spring adds a whopping 25 per cent to loader and tractor life—reduces downtime and boosts production, too!

No other front-end loader has Hydro-Spring advantages—which you get in four big-capacity, contractor-proved International Drott Skid-Shovel sizes. Why not ask your International Drott distributor for a demonstration of the money-making size best suited to your needs?

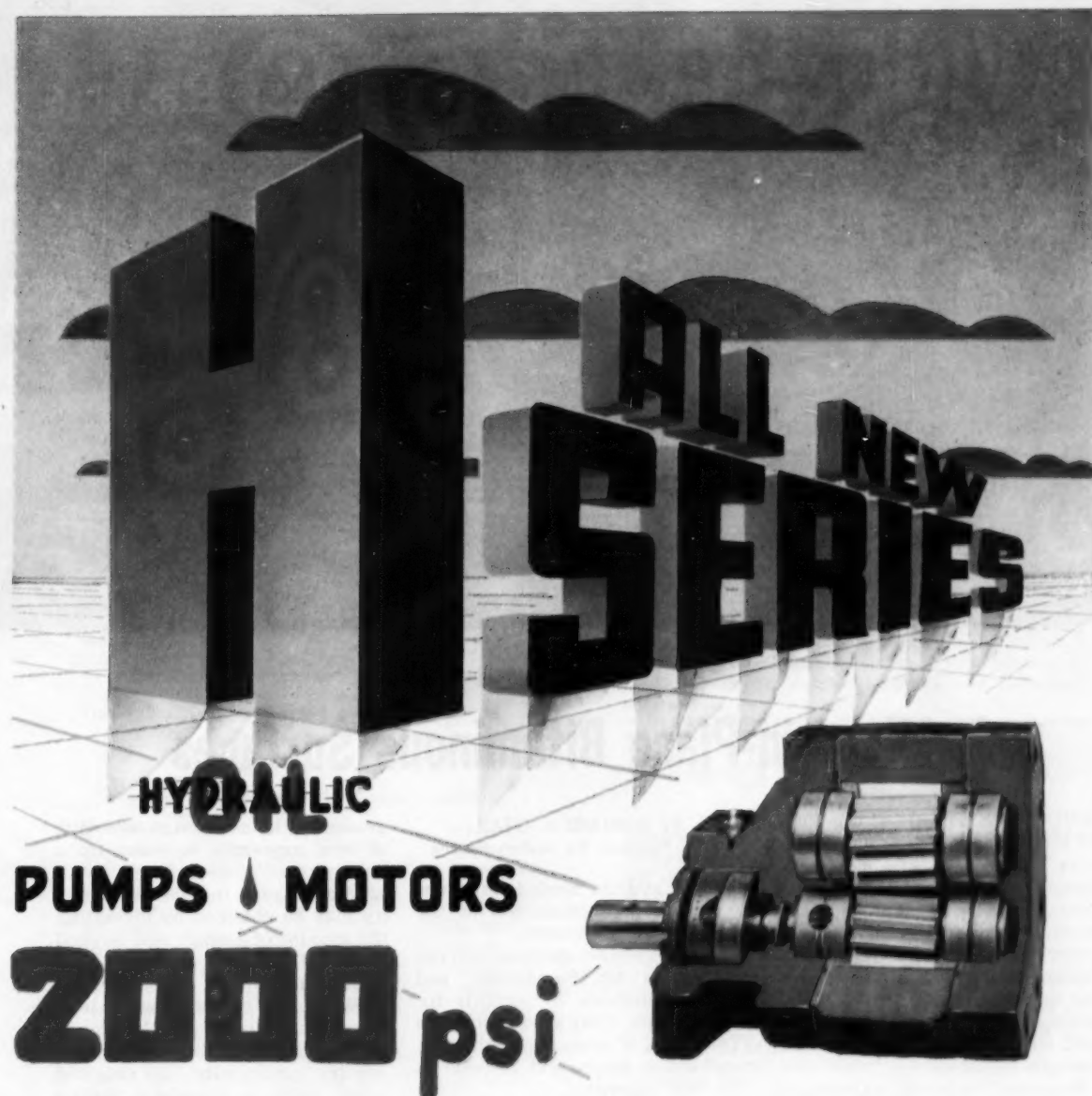


How exclusive Hydro-Spring works and saves for you!

Exclusive Hydro-Spring is a hydraulic cylinder enclosed in a heavy-duty coil spring. Shock force displaces oil from main lift cylinders into the Hydro-Spring cylinder—extending it and compressing the big spring to *absorb* and *cushion* impact loads. Hydro-Spring reduces the consequences of shock forces by an *actual 67 per cent or more*—also eliminates most hydraulic hose failures!



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2000 psi

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continuous duty constant delivery operation—volumetric efficiency over 90%—7 sizes—single pump discharge 12 to 40 gpm*—single motor output 12 to 38 hp*

*(1200 rpm @ 2000 psi)

NEW DEPENDABILITY

extra large gear bearings maintain shaft alignment—special tapered roller outboard bearings absorb all drive shaft and shock loadings—new leakproof oil seals prevent leakage

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precision ground matched helical steel gears reduce noise, run smoother and are more quiet

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SAE standard flange or pedestal mounting—round or splined shafts—SAE standard side or end portings—threaded pipe or split flange connections—double rotation without alteration

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KA-68

PAVING...HOW TO GET THE BEST RESULTS



2. Mixed-in-Place Bituminous Surfaces

ABOUT ONE-THIRD of the 450,000 mi of low-cost improved highways in the U.S. are mixed-in-place types. The term describes the process of mixing aggregate and bituminous materials on the road rather than in a stationary plant. Thickness of the compacted surface may vary from 1 to 6 in. according to the type of aggregate used and the degree of additional strength required.

Engineers began to experiment with what were then called "dragged surface treatments" during the 1920's. They applied a little extra asphalt and aggregate, then moved the surplus into low spots in the road to add strength and improve the riding qualities of the pavement. Equipment was primitive, but the method soon proved to be a rapid and inexpensive way to strengthen old roads or construct new surfaces.

Another use is for subgrade treatment in heavy-duty construction, especially with sandy-gravel or crusher-run bases. Mixing and blading the upper 1½ in. of such base material is far superior to the usual priming operation. It assures the desired profile and cross-section prior to placing the plant-mix pavement and provides both high

By BERNARD E. GRAY

Former President, The Asphalt Institute

stability and the needed resistance to get proper compaction of the first layer of pavement.

Mixed-in-place surfaces also are used both for foundations and wearing surfaces in airports for small planes. They are particularly economical in areas where the natural soil is sandy and suitable as the mix aggregate.

There is an almost infinite variety of soils and aggregates that can be processed satisfactorily by mixed-in-place methods. But in general, aggregates containing more than 25% passing 200-mesh sieve are of doubtful value except under very favorable conditions. For most sandy gravels, 15% passing the 200-mesh sieve is a maximum. Tables 1, 2, and 3 show the quantities of asphaltic materials needed and the grading requirements for the principal aggregates now in use.

Proportioning of aggregate and asphalt is of the greatest importance. Preliminary studies should be made to determine the absorbency of the aggregate. In dense-graded mixtures where stability is a controlling factor, it may be

necessary to add small amounts of new aggregate to make up a deficiency of a needed size. With sand aggregate, the needed stability may be obtained by increasing the amount of asphalt well beyond the usual limits—occasionally to as high as 14%.

Warm, dry weather helps produce the best results. Mixing is accomplished more rapidly and greater uniformity is obtained when work is completed during the summer months. Warm weather traffic is a great aid in final consolidation. Surveys show that work done after September often lacks uniformity.

Equipment

Equipment for mixed-in-place work has had a remarkable development. For the early dragged treatments, equipment was largely improvised. Drags of steel fencing fastened to wood plank and even old carpeting were used. Now there is a machine to meet almost every condition of aggregate, traffic and climate.

Present day specifications provide for two alternate methods of construction. One is by blading and dragging; the other is by travel

Table 1 . . . Macadam—Aggregate Type Mixed-in-Place Surface Course

(Usual thickness range: 1½ in. to 2½ in.)

GRADING REQUIREMENTS FOR AGGREGATES

Type	Mixing Aggregate % by weight	Seal Coat Cover % by weight
Total Passing	100	
1½-in. sieve		
1-in. sieve	90-100	
¾-in. sieve	40-75	100
½-in. sieve	15-35	90-100
¾-in. sieve	0-15	40-70
No. 4 sieve	0-5	0-15
No. 8 sieve		0-5

APPROXIMATE QUANTITIES FOR 2-IN. COMPACTED THICKNESS

Materials	Per Sq Yd	Per Mi 1 Ft Wide
Mixing aggregate (No. 5)	173.0 lb	50.8 tons
Seal coat cover (No. 7)	18.0 lb	5.3 tons
Asphalt primer	0.4 gal	234.0 gal
*Asphalt binder (RC-3)	1.1 gal	649.0 gal

*The following alternates may be used for asphalt binder:
 RC-2 — Cool weather mixing average aggregates
 MC-2 — Cool weather mixing absorbent aggregates
 MC-4 — Cool weather mixing non-absorbent aggregates
 MC-3 — Warm weather mixing absorbent aggregates
 MC-5 — Warm weather mixing non-absorbent aggregates
 Emulsified asphalt, grade selected according to aggregate and equipment used.

Table 2 . . . Dense-Graded Aggregate Type Mixed-in-Place Surface Course

(Usual thickness range: 1 in. to 4 in.)

GRADING REQUIREMENTS FOR MIXING AGGREGATE

Kind of Aggregate	Desirable % by weight	Irregular (Fine) % by weight	Irregular (Coarse) % by weight
Total Passing	100	100	
1-in. sieve			
¾-in. sieve			100
½-in. sieve			80-100
No. 4 sieve	50-70		35-75
No. 10 sieve	35-60		20-60
No. 40 sieve			10-35
No. 200 sieve	0-14	10-20	0-8

NB seal coat cover aggregate usually clean sharp sand all passing No. 4 sieve.

APPROXIMATE QUANTITIES FOR 2½-IN. COMPACTED THICKNESS

Materials	Per Sq Yd	Per Mi 1 Ft Wide
Mixing aggregate	234.0 lb	68.7 tons
Seal coat cover (sand)	10.0 lb	2.9 tons
Asphalt primer	0.4 gal	234.0 gal
*Asphalt binder (MC-3)	2.0 gal	1173.0 gal

*The following alternates may be used for binder:

MC-2	Cool weather mixing (average aggregate)
MC-4	Hot weather mixing
SC-2	Cool weather mixing
SC-3	Moderate weather mixing
SC-4	Hot weather mixing
RC-2	Cool weather mixing aggregate containing little or no 200 mesh
RC-3	Hot weather mixing aggregate containing little or no 200 mesh

Emulsified asphalt, grade selected according to aggregate and equipment used.

Table 3 . . . Sand-Asphalt Type Mixed-in-Place Surface Course on Natural Sand Subgrade.

(Usual thickness range: 3 in. to 6 in.)

REQUIREMENTS FOR MINERAL AGGREGATE

- (a) Clean, tough, rough surfaced sand grains, free from clay lumps Passing No. 200 sieve not more than 25% by weight.
 (b) Quality Control. When mixed with 4½% asphalt binder proposed for use, and allowed to aerate in an oven at 100° F. in a 1-in. layer for 16 hr, the compressed mixture shall develop a Hubbard-Field stability of 1,200 lb plus, at 77° F. Sand which fails this requirement should be so modified by addition of other fine material as will then meet requirements of (a) and (b).

NOTE: Other tests for stability may be used, but it is very important to predetermine stability quality of the sand.

APPROXIMATE QUANTITIES FOR 4-IN. COMPACTED THICKNESS

Materials	Per Sq Yd	Per Mi 1 Ft Wide
Sand aggregate	Already in place	In place
Seal coat cover (sand)	10.0 lb	2.9 tons
*Asphalt binder	3.6 gal	2,113 gal

*The following alternates may be used for asphalt binder:

- For blade and harrow mixing and for sand with 10-25% passing No. 200 sieve, use RC-1 or MC-2.
- For blade and harrow mixing and for sand with 0-10% passing No. 200 sieve, use RC-2 or RC-3.
- For travel plant mixing and for sand with 10-25% passing No. 200 sieve, use RC-2, RC-3 or MC-3.
- For travel plant mixing and for sand with 0-10% passing No. 200 sieve, use RC-3.
- Emulsified asphalt, grade selected according to aggregate and equipment used.

plant mixing. There is a trend to use travel plants in place of blade-harrow equipment on highways with medium or heavy traffic. But the blade-harrow method often is more effective, especially when the only aggregates immediately available are types that require considerable blading before they become completely stable. This is particularly true of irregularly graded sands and gravel.

There are three principal types of travel plant mixers. One picks up the aggregate from a windrow, mixes it with asphalt and deposits the completed mixture behind either in a windrow or spreads it to the desired thickness. In the

second type, aggregate is dumped into a hopper, passed through the mixer and spread as the plant moves along. A third type mixes aggregate and asphalt under a metal hood without elevating from the ground.

The selection of a particular type travel plant depends largely on the aggregate to be used. If practically all the aggregate can be obtained from the existing roadbed, the windrow pick-up or metal hood type is most suitable. If all aggregate must be hauled in, the hopper type may be more efficient. With travel plants more rapid curing asphalt binders can be used, one-half road construction is sim-

plified and the entire surfacing operation can be completed more rapidly than with a blade-harrow.

A substantial amount of equipment is required when dense-graded aggregates are to be mixed in place in thicknesses of more than 5 in. This will include three furrow gang plows with 14-in. bottoms, capable of plowing to a depth of 10 in., at least one grader with a 12-ft blade and harrows with 22-in. dia disks. For thinner surfaces lighter harrow equipment, 10-ft blades and heavy duty orchard-type cultivators may be sufficient.

Both steel-faced and pneumatic rollers are used for compaction.

(Continued on next page)

UNIT MODEL 510

THE NEW UNIT *Challenger* ...with CLAMSHELL



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because UNIT's advanced design gives you Self-Aligning, Replaceable Hook Shoes... Straight-in-line Engine Mounting with Torque Converter... Hydraulic Actuated Clutches... Modern Transmission with Involute Splines... One Piece Cast Gear Case... Alloy Steels and Forgings... Force Feed Lubrication and many other UNIT advantages. These life-prolonging features are contributing substantially to the performance and efficiency of each machine. And they explain why UNIT equipment is so universally acceptable.

See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.



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Geared to boost your earnings!



MIXED-IN-PLACE . . . Continued

Eight and 10-ton sizes are usual, but for a thickness of 1½ in. or less the 5-ton size is adequate. Broom dragging the seal coat aggregate, along with rolling, is desirable, particularly with dense-graded aggregate mixtures.

Macadam Aggregate

Macadam or open-graded aggregate is a one-sized commercial crushed product—such as stone, slag or crushed gravel—ranging from 1½ in. down to ¼ in. It is practically free from dust. The inherent stability or load-supporting capacity depends principally on the interlocking of the individual particles, not on packing the voids with fine material. But this natural stability must be preserved by a strong asphalt binder. Usually, all of this type aggregate is hauled in. The existing base frequently has been surface-treated, but it may be any untreated base which can be well bonded to form a stable foundation.

It always is necessary to prime an untreated base before placing the crushed aggregate. This hardens and seals the foundation so that water cannot rise into the wearing course and prevents loose, dusty material from working into the wearing course during mixing operations. The amount of the primer depends upon the character of the base. For surface-treated macadam, as little as 0.1 gal per sq yd may be needed. An untreated base should get as much primer as it can absorb—from 0.3 to 0.5 gal per sq yd.

The aggregate must be angular and properly graded to produce the most stable condition. Crushed stone, crushed slag and crushed gravel (with at least 60% of the particles crushed) all have been used successfully. Table 1 (p 91) shows recommended sizes for a 2-in. compacted thickness. When this type is used as a binder course to correct a rough base or reduce crown, aggregate with ¾-in. maximum size may be preferable in order to featheredge in the final spreading.

To mix by blading and dragging, allow several days for the prime coat to cure, then spread the required volume of aggregate. Smooth the aggregate with harrow and grader to provide uniform depth just before the first application of asphalt. This also will remove dust and dirt that may have



WELL-BLENDED MIX is spread behind Moto-Paver. Aggregates are dumped from trucks into hopper, elevated to a pugmill, mixed with a controlled amount of asphalt, and spread.

become mixed with the crushed material and assure dry aggregate. If rain falls on the aggregate before the first application of asphalt, a few passes of harrow and grader will speed drying.

Asphalt material usually is applied in three applications—two for mixing and one for seal coat. Two mixing applications of approximately 0.4 gal each—rather than a single application—will result in more complete coating of particles and will prevent asphalt from running through to the base or over the edges.

Mixing aggregate and asphalt will require from six to 10 passes with harrows or from two to six passes with a drag, depending on the design of the equipment. On fine-grained bases, harrows sometimes tend to cut or break the primer bond or segregate the fine aggregate particles. When this happens, use multiple-bladed drags alone.

After the second asphalt coating becomes "tacky" and begins to set, spread the mixture to uniform depth and roll it. Standard rolling practice is to run longitudinally, beginning at the edge and working toward the center until the mixture is fully compacted. Then, remove any fat spots or ravelled areas and repair them by patching with premixed stone and asphalt.

The seal coat should be applied after several weeks under traffic when all areas are thoroughly stabilized. The process usually is the reverse of ordinary surface treatment; mineral aggregate should go down first and asphalt second. For a 2-in. thickness, spread about 18 lb of fine aggregate and broom it into the surface voids. Then follow with an application of 0.3 gal asphalt. Dragging and rolling completes the work.

The base is prepared in the same way when mixing is to be done by a travel plant. For the more simple travel plants, the aggregate usually is deposited in measured windrows. Then a pressure distributor applies the asphalt binder to the windrow in the full amount required for mixing just before the travel plant operation. The finished mixture is deposited behind the plant in windrows and spread by long wheel base blade graders.

The more complete travel plants, equipped with asphalt meters, measure the aggregate into the mixing box and add a controlled amount of asphalt. The designed quantities range as follows:

Compacted Thickness	Gal per sq yd
1½ in.	0.45 to 0.6
2 in.	0.6 to 0.8
2½ in.	0.7 to 0.9

(Continued on page 97)

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TDA 2-Speed Axles answer trucking's need for flexible power. Exclusive double-reduction design permits a range of spreads all the way from 28% to 49% . . . in an almost unlimited number of gear combinations. TDA allows tailoring the power of your truck to meet any variety of hauling conditions.

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Exclusive, double-reduction design offers almost unlimited possibilities of gear ratios and ratio spreads—this versatility provides tailored power for every trucking need.

How TDA's extra "spread" works to your benefit. All 2-speed axles employ an extra set of gears to give two ranges of speed or power to choose from . . . one for *pulling power*, the other for fast speed. Most 2-speed axles offer only one choice of "spread"—37%. Design limitations prevent changing this standard "spread".

However, TDA uses the exclusive double-reduction design. With TDA, spreads are available all the way from 28% to 49%. This means that your axle can actually be tailored to give you just the power you need. Not only can you specify the spread most suited to your immediate trucking need—but you can easily *change* from one spread to another by merely changing the low speed helical pinion and gear—an easy mechanical change.

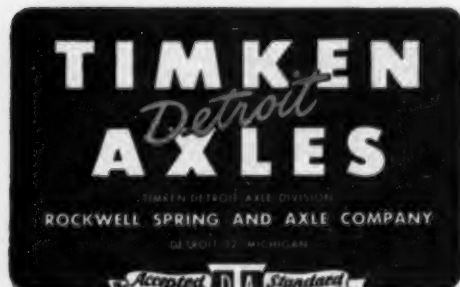
TDA's more efficient use of engine power gives important benefits . . . high road speeds, faster deliveries, better payload, and maximum fuel economy. No matter what your hauling problem or load/road conditions you save with TDA.

How TDA's 2-Speed principle works! A husky hypoid ring gear and pinion set (No. 1 above) provide the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second*



step. Both sets are of balanced size and capacity. One set (No. 2) is for fast speed; the other (No. 3) is for slow speed. The clutch collar (No. 4) power shifts to right or left to engage one helical pinion or the other.

Greater endurance, longer truck life with TDA. TDA's simple design eliminates small complicated parts and midget size gears. Large hypoid-helical design provides more teeth in contact—quieter operation and far less strain. Bearings are larger, too. All this adds up to more profitable operation under all conditions.



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The Engineer's Field Report

CASE HISTORY

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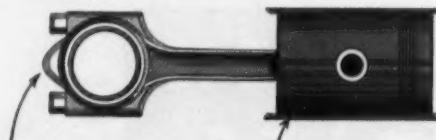


This Mack tractor's 200 h.p. Cummins diesel went in for its first overhaul after four years hauling heavy equipment to and from Arizona construction jobs. The rig hauls loads up to 25½ tons in on- and off-highway work. Using RPM DELO Special Lubricating Oil since new, inspection after 150,000 miles showed oil return holes clear, all rings free and in good condition, maximum sleeve taper only .0045". Manley Johnston, Shop Foreman, Arizona Sand & Rock Co., reported, "The engine was really clean! It could have gone at least 50,000 more miles." Arizona Sand & Rock, general contractors for road building projects and operators of a large plant,

works its equipment in constant dust and grit...in desert and mountainous terrain. The company depends on RPM DELO Oils to give the protection these heavy-duty engines need under these tough conditions.

Why RPM DELO Oils reduce wear in heavy-duty engines

Detergent keeps parts clean...helps prevent piston scuffing. Special compounds stop corrosion of any bearing metal and foaming in crankcase.



Special additives provide metal-adhesion qualities...protect parts hot or cold, running or idle.

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WINDROWED AGGREGATE is picked up by Barber-Greene conveyor, dumped into B-G travel plant, mixed with required amount of asphalt, and spread into a second windrow.



TEAM OF CATERPILLAR GRADERS mixes asphalt with in-place materials. Blade mixing is most effective on irregularly graded sands and gravels requiring considerable blending.

Under favorable conditions travel plants may use heavier grades of asphalt which cure so quickly that immediate spreading to the required cross-section is practicable. But even then sufficient time should elapse before rolling to assure setting of the asphalt. On the other hand, spreading by means of a long wheel base blade grader provides an opportunity to obtain a very smooth riding surface, especially if the old base was somewhat uneven.

Dense-Graded Aggregate

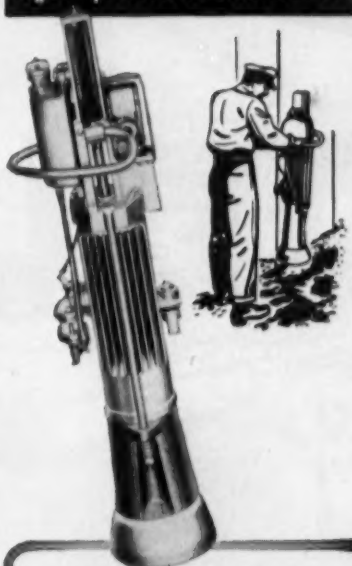
Aggregate consisting of sand, a continuously graded gravel or crusher-run stone ranging from

about 1 in. dia down to and including dust is called dense-graded aggregate. This type aggregate, when compacted, should resemble in its inherent stability and high load-supporting value a first-class, slightly moist gravel road.

Interlocking of the coarser particles is not essential, but the voids between them should be well packed with fine materials containing an appreciable quantity of 200-mesh particles. This aggregate does not require a strong binder to produce a high load-supporting wearing course. But it is necessary to use an asphalt product that has a low initial viscosity to permit complete and ready mixing with

(Continued on page 100)

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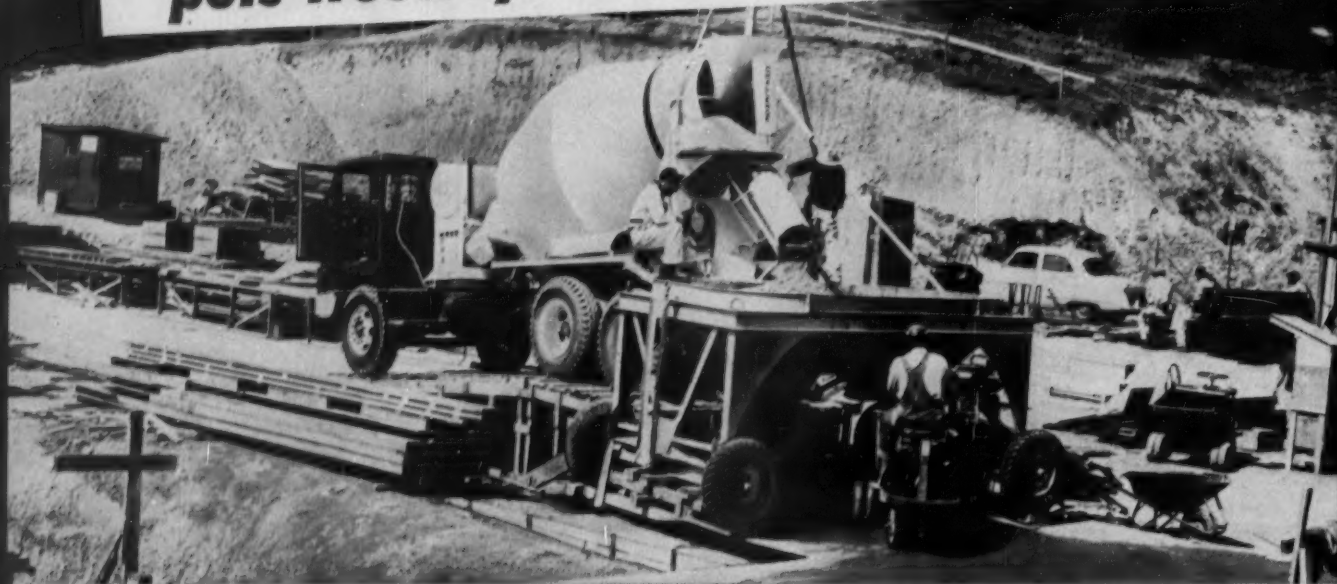


PHOTO COURTESY CHALLENGE MANUFACTURING COMPANY, LOS ANGELES, CALIFORNIA

Chrysler Compact Power and drive package ideal for sidemounting on transit mixer

Working hard to keep pace with its growing population, the State of California is underway with a substantial highway program. Great limited-access arteries are already carrying millions of vehicles past populous points and more "freeways" are in the making.

Here pictured in construction is an overpass on one section of the Southern California Freeway. A Challenge Transit Mix Pacemaker is pouring concrete into a collecting hopper. The hopper in turn will empty the mix into a power buggy which will carry it to the forms.

Probably neither the operator nor the contractor has given the ramp the truck is backed up onto a second thought — nor should they. Twelve-degree inclines are not unusual for modern-day transit mixers. Mixer manufacturers build and power their units to give maximum performance under every conceivable condition. That's why Challenge Manufacturing Company powers the bulk of its highly-regarded transit mixers with Chrysler Industrial Engines. Then too because of their light weight, compact construction, Chrysler Industrial Engines are "made to order" for Challenge side-mount construction. Engine, drive and transmission are on the side of the truck bed alongside the drum.

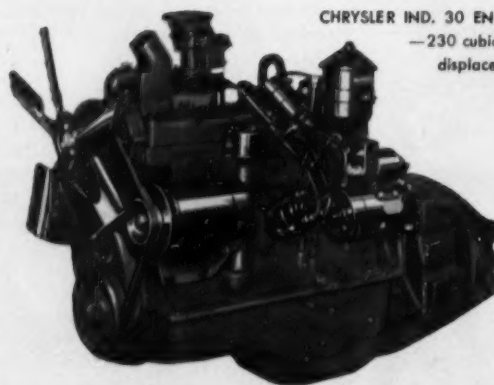
The 6½ cubic yard capacity mixer pictured uses the 230 cubic inch displacement Chrysler Ind. 30 Engine equipped with Chrysler glycol Fluid Coupling. This "package" is a standard feature of Challenge Mixers. The result is a power-packed combination with built-in protection against the

wear and tear of daily use and possible inexpert operation.

Important manufacturers of construction equipment have found it good business to offer their customers dependable equipment, dependably powered. For most of them that means Chrysler Industrial Power. They have found, as you will too, that Chrysler production-line methods adapted to specialized industrial engine building provide custom-built engines at mass-production prices.

See a Chrysler Industrial Engine Dealer or write:

Dept. 1010, Industrial Engine Division, Chrysler Corp., Trenton, Mich.



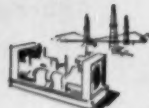
CHRYSLER IND. 30 ENGINE
—230 cubic inch
displacement

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Tough grading jobs are handled easily and quickly by this 31,450 pound motor grader, powered by a 195 h.p. General Motors diesel engine.

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An Allison Torque Converter protects the unit from shock loads while a full power-shift transmission — **WITHOUT CLUTCH** — permits quick shifts under full load without interrupting power flow from engine to load. A tail shaft governor automatically adjusts engine RPM to meet any load condition, at any speed set by the operator. Power sliding moldboard is standard equipment.

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These power and performance features have been combined to increase the working capacity of the 5D-190 and reduce costly down-time. With this motor grader it is possible to move more material, with fewer passes. This increased working capacity will add more profit to every job.

For more information write for Huber-Warco 5D-190 literature — Bulletin HWG-508 and Bulletin HWG-510.

For More Details — See Your Huber-Warco Distributor



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MIXED-IN-PLACE . . .

Continued from page 97

the aggregate and that will increase in viscosity thereafter so as to resist displacement by capillary pressure.

Much or all of the mineral aggregate needed to surface an existing gravel or traffic-bound stone road may be obtained by scarifying. When it is necessary to reinforce the existing road, some or all of the wearing-course aggregate must be brought in as new material.

In general, the aggregate grading need not fall within narrow limits, but on any given job it should be made uniform throughout so that a uniform application of asphalt can be made. Desirable grading limits are shown in Table 2 (p 91). With careful design, many irregular gradings also will give good results.

Natural gravel or crusher-run aggregate may be used satisfactorily. Adding sand or stone screenings usually will make up for deficiencies of fines in these aggregates. But there are limited areas where aggregates—especially those containing caliche—have a stronger affinity for water than for the asphaltic material. These unsatisfactory aggregates usually can be identified in laboratory tests such as plasticity index (P.I.) and sand equivalent. If the history of the aggregate is at all questionable, laboratory testing is recommended.

Sandy Soil Aggregate

Sand-asphalt, using natural sandy soils as aggregate, is a particular kind of dense-graded mix. For that reason it is covered in a separate specification to describe the heavier harrow-grader equipment usually needed. Table 3 (p 91) shows the requirements for aggregate and quantities of material. The general procedures for travel-plant mixing are similar.

It is important to use the correct amount of binder with a particular mineral aggregate. A number of formulas based both upon void content and grading of the aggregate have been designed, but the trend now is to employ one of the several stability tests as a more accurate measure.

To determine the correct amount of asphaltic material, the mineral aggregate should be practically free from moisture. It is equally important that the aggregate

(Continued on page 105)

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STANOLITH MP Grease—a single grease—lubricates all equipment at Wright Mine



THE BOONVILLE COLLIERIES Corporation's Wright Mine uses STANOLITH MP Grease to lubricate all grease-lubricated bearings. To Wright Mine management this is good business. Using a single but multi-purpose grease, the management finds, cuts grease inventories, reduces grease dispensing equipment and, in application, eliminates costly dispensing mistakes.

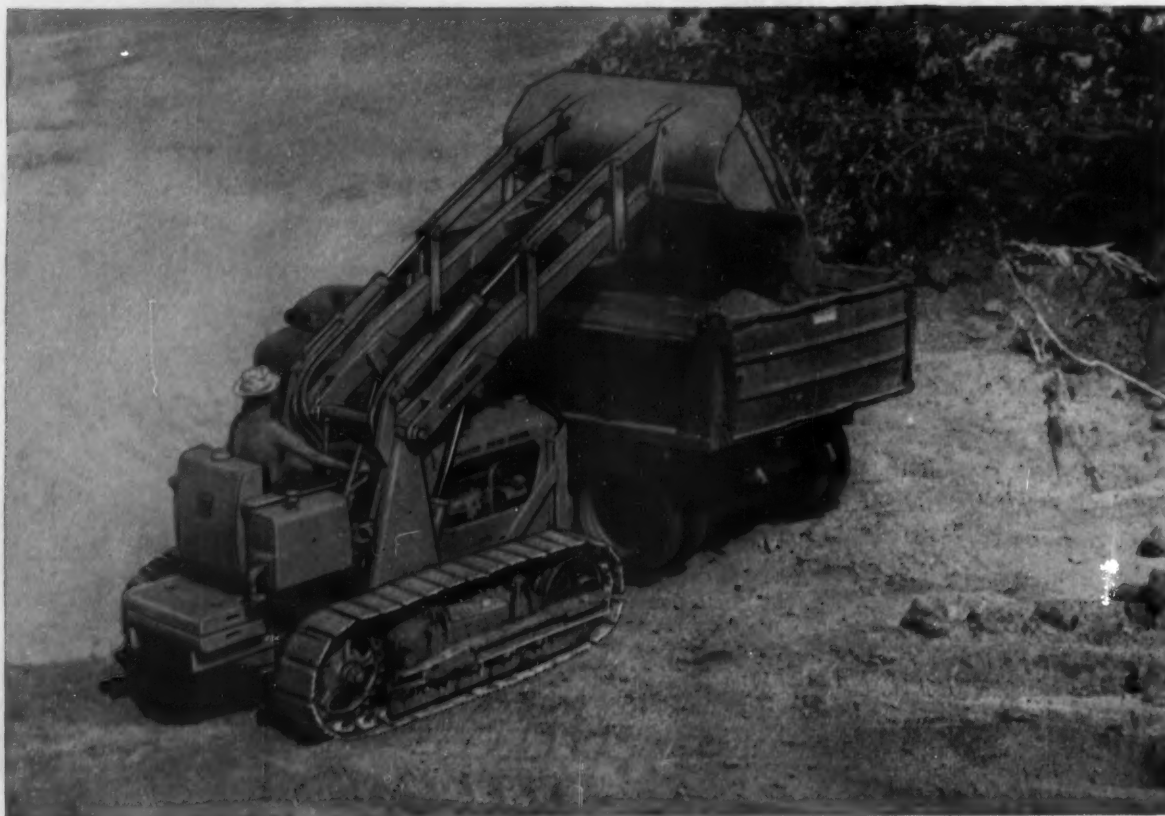
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Marlin Carter, Wright Mine pit foreman (right), and Oscar Daussman, Standard Oil lubrication specialist, discuss equipment lubrication. Oscar is an old hand at providing technical service on lubrication problems. He has had more than 30 years' experience with Standard Oil, much of it working with customers on such lubrication jobs as this one at Wright Mine. Customers find this experience pays off for them.



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OLIVER OC-12 with 53 d.b.h.p.



53 d.b.h.p. really pays off behind this rugged dozer blade. Its front-mounted cylinders and pump provide extremely accurate control with powerful down pressure for hard, heavy soils. Angle blade also available.

Now it's official—the OC-12 tops them all!

It develops 53 d.b.h.p. with an engine having exceptional torque characteristics that provide extra lugging ability under heavy loads. There's more push or pull in every gear...less shifting...bigger loads every time. Diesel or gas models available. Both with the same high h.p. and outstanding economy record.

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OC-12 attachments outperform the rest, too. This loader, for example, has a bucket with more rollback. It fills faster, levels at any height to carry bigger loads with less spilling. It's a balanced unit with stability...clearance...long reach...10'4" (124") lift. Regular bucket is 1¼-yd. size. Two and one-quarter yd. available for light materials. See your Oliver Distributor for complete information. Let him show you the OC-12 in action.

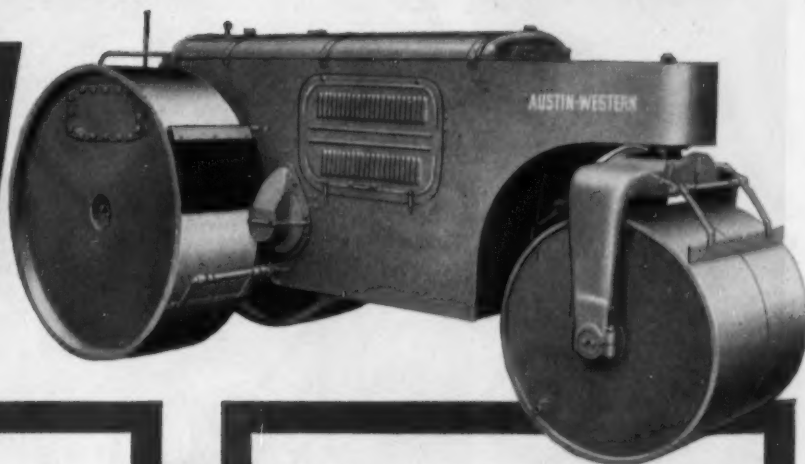
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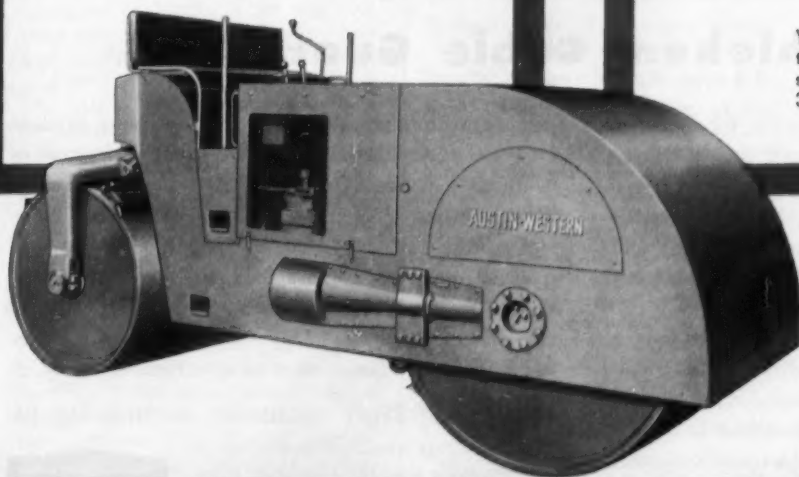
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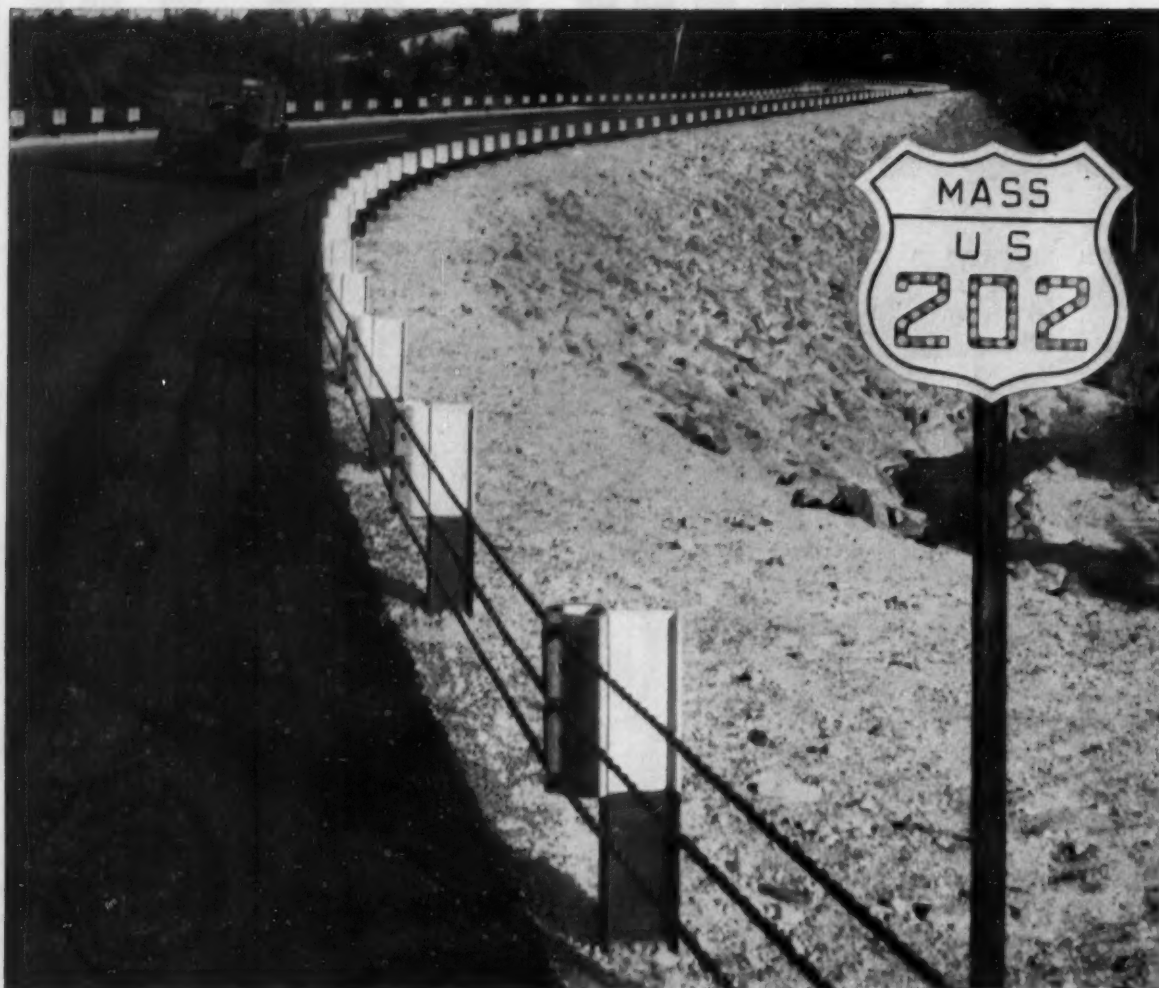


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This wire cable guard, with its special bumper-type bracket, is of simple design, easy to install, and of low initial cost. It requires little maintenance, is adaptable for use with steel, wood or concrete posts, and is furnished to comply with any state regulations. Bethlehem Cable Guard Rail comes with 2, 3 or 4 cables, with 1, 1¼ or 1½-in. anchor rods.

Bethlehem furnishes cable guard rail, steel posts, brackets, cable ends, anchor rods, cable splicers and fittings, all of which assemble readily and easily on the job. In addition, Bethlehem makes Safety-Beam Guard Rail, a solid-beam-type guard rail.

If you would like to have additional information about Bethlehem Guard Rails—as well as other Bethlehem products used in the construction of highways—just call the nearest Bethlehem sales office, or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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BETHLEHEM STEEL

should be nearly dry before the asphalt binder is applied. Proper coating is not possible with too wet aggregate. In addition, moisture occupies void space in the compacted aggregate, and so its presence may create a misleading appearance of over-richness. It is not always possible to maintain aggregate on the road in a "bone dry" condition, but there should not be more than 2% moisture by weight in the aggregate at the time of mixing. In compacted aggregate, 2% moisture will occupy from 4 to 4.5% of void space. Proportions should be adjusted, therefore, so that on a "bone dry" basis the compacted mixture will contain approximately 6.5% of voids.

When aggregate is obtained by scarifying, all clumps of bonded material should be broken up. Then, the loose material should be bladed into a single windrow and sampled for grading. To assure proper control, any added aggregate should be in two sizes with the 1/4-in. sieve the dividing line. New aggregate should be thoroughly mixed with the old by blading and harrowing. Then, the mixture should be bladed into a triangular windrow of uniform cross-section at the side of the road and measured. The proper rate of asphalt binder can be determined from the loose weight per unit volume.

Blading and Dragging

To mix by blading and dragging, the base first should be primed with all it will absorb, usually about 0.4 gal per sq yd. Then, the windrow is bladed over the full roadway to uniform depth. For 2 1/2-in. thickness the total binder will average about 2 gal per sq yd and will involve three or four applications. Tractor-drawn power-mixers (or harrows and blade graders) should follow immediately behind the distributor and continue until blending is complete. Immediate mixing combines the asphalt binder with the aggregate sufficiently to permit the passage of traffic without pick-up.

After the preliminary blending, blade graders carry out further mixing. One-man, power-driven equipment is most satisfactory for the purpose. The treated aggregate is bladed to a windrow at one side of the road. Then, it is moved in successive cuts to a windrow at the other side. This is preferable to moving large quantities in a single operation. It may require as many as 15 complete transpositions

with 60 to 70 individual cuts of the blades. If it should rain before mixing is complete, blading should be continued until the mixture has dried out.

It is important to protect the edges of the wearing course. Edge failures are progressive and involve unnecessary maintenance costs, but proper construction methods will prevent them. In the graded-aggregate type, these failures can be prevented by making a thickened edge just before the final spread of mixture from the windrow. Make a triangular cut

with the grader at each edge of the base course. The cut should be 2 in. deep at the outside and should slope to zero at a point 2 ft in and toward the center. This will prevent feather-edging when the mixture is smoothed out and compacted and the material cut from the base will provide lateral support as a shoulder.

Final spreading should be a succession of thin spreads both to obtain a smooth riding surface and because traffic, accompanied by light blading and dragging, will

(Continued on page 108)

NEW JERSEY TURNPIKE "takes the measure"



Photo courtesy New Jersey Turnpike Authority

of the new BERGER POLARA



The Project: Widening 22 mile stretch of Turnpike, including 19 structures.

Contractor: Reid Contracting Co., Woodbridge, N. J.

Harry Christie, Chief Engineer at Reid Contracting Co., is an engineer who isn't averse to cutting costs provided it doesn't mean cutting corners. That's why he equipped his three surveying crews with the budget-priced Berger Polara. Its 5 1/2" horizontal circle, reading to one minute, and resolving power of four seconds, provided the right combination for the job at hand—just as other Turnpike jobs called for Berger's more critically precise 6 1/4" Engineers' Transit.

Polara was put right to work, setting bearing lines on piers and abutments, setting anchor bolts to 1/4", lining up culverts and setting grades. Typical com-

ments of the crews: "Clearest optics we've ever seen." "Excellent controls—almost impossible to make a mistake." "Rugged and dependable."

"In widening the structures," said Harry Christie, "we found we couldn't rely on the old plans to match the line of abutment. This meant 'feeling out' every inch of the way with our Polaras. And every time we swung a steel section into position and saw how nicely it fit, we knew we had a mighty good transit."

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Hear What They Say:

SUCCESSFUL FLEET OPERATORS ENDORSE PHILLIPS 66 HEAVY DUTY MOTOR OILS!



"Our construction company operates 18 kinds of Caterpillar Diesel units and 40 Ford Trucks. We've been using Phillips 66 Heavy Duty Motor Oils ever since 1941. We have no excessive oil consumption, carbon or sludge. And if you could take a look at our engines at overhaul, you'd find they are remarkably clean."

"I operate a fleet of 25 taxicabs. Been using Phillips 66 Heavy Duty Motor Oils nearly seven years. We haven't had any valve or bearing trouble since changing to Phillips 66, and we get top performance for at least 125,000 miles with no repairs."

"My freight transportation company operates 80 Diesel tractors and 173 trailers. We've been using Phillips 66 Heavy Duty Motor Oils since 1946. We get very little sludge or wear, and our engines are remarkably clean at overhaul."

"I'm maintenance superintendent of a bus company operating over 40 city buses. Since changing to Phillips 66 Heavy Duty Motor Oils, we've kept our engines cleaner; engine life has increased considerably; we have greatly reduced over-all maintenance costs."

"I'm Operating Manager of a cartage company. We operate 56 over-the-road tractor units and 55 city pick-ups. We've been using Phillips 66 Heavy Duty Motor Oils for nearly five years. I can report minimum wear; negligible sludge and varnish; no trouble with bearings; no fouling; and oil consumption of 128 miles per quart, including oil changes every 2,000 miles."

"I operate a taxicab fleet in Illinois. Our engines used to be just too dirty when we took them down. Since changing to Phillips 66 Heavy Duty Motor Oils, our engines are cleaner and we don't get as much low-temperature sludge. Overhaul has been stretched out to between 85,000 and 125,000 miles. Phillips 66 is the best oil I've used. It helps cut our maintenance costs and gives us more efficient use of our cabs."



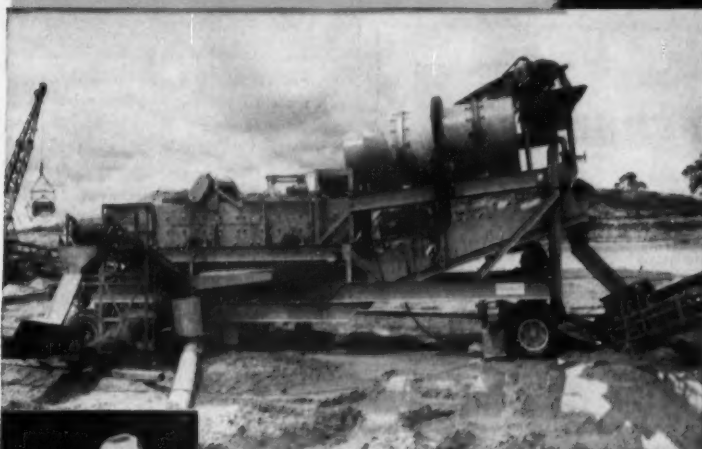
Test Phillips 66 Heavy Duty Motor Oils against the oil you are now using. A Phillips 66 Lubrication Engineer will be glad to help you set up a test. Write to: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Oil for the Engines of Commerce



PHILLIPS 66 HEAVY DUTY MOTOR OILS

NOW YOU CAN MEET STRICTEST WASHED AGGREGATE SPECIFICATIONS WITH BIG-PROFIT PRODUCING CAPACITIES



"We're getting 150 tons per hour meeting Illinois specifications" says Bill Howard, President ROCKFORD BLACK TOP CONSTRUCTION CO. Rockford, Illinois

The new Wash-All Plant in Rockford Black Top's 100% Cedarapids set-up is meeting Illinois specifications right on the nose . . . producing No. 4 down, $\frac{3}{4}$ " to No. 4, 1" to No. 4 and 1" plus oversize . . . and turning out 150 tons per hour!

Meeting the quantity and quality demands of today's stepped-up highway program, at a nice profit for you, is the result of this all-new Cedarapids design. The Wash-All, with its many exclusive features, is the only *complete* portable washing and screening plant on the market! There's no additional equipment to buy to give you big-volume production of accurately graded washed aggregate. It's quality-designed throughout for low, low maintenance and operating costs...so you can make money *from* your equipment, instead of spending money *on* it! Compare the Cedarapids Wash-All, feature by feature, with any other portable washing and screening plant . . . ask your Cedarapids distributor for full information about the money-saving, money-making design details.

Cedarapids
Built by
IOWA

THE CEDARAPIDS WASH-ALL

A portable washing and screening plant designed to meet rigid specifications for the new road program

- Completely new 60" x 10' scrubber (optional) . . . the only adjustable scrubber on a portable plant!
- Scrubber driven by positive gear drive, instead of friction drive, to eliminate slippage and stalling under load.
- Lifting paddles, drive ring gear and drum tires bolted, instead of welded, for easy replacement.
- 3-ring baffles inside scrubber control speed of material; made in four segments and bolted in place.
- Removable ring at discharge end of scrubber can be changed to different diameters to control depth of material.
- Horizontal Vibrating Screen gives $12\frac{1}{2}\%$ greater screening area than an inclined screen of the same size.
- Ten spray bars, each separately controlled by an adjusting valve, give individual control for each section of screen.
- Motorized Head Pulleys on all plant conveyors eliminate 70% to 90% of conveyor maintenance.
- All piping (standard equipment) installed at factory to insure correct diameter sizes of pipes for various components.
- 24" x 25' twin-screw washer-classifier-dehydrator used instead of a drag scraper tank.
- Sand is discharged into classifier-dehydrator far enough away from waste water flume to prevent unnecessary loss of fines.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U. S. A.

MIXED-IN-PLACE . . . Continued from page 105

provide a large part of the needed compaction. It is desirable to roll the edges and shoulders with a steel-faced roller when traffic is light and not well distributed. If there is a threat of rain, the roller may be used to close the entire surface.

Pneumatic-tired rollers expedite compaction. Rolling and blading compaction may be required for three to 10 days before traffic no longer ruts the surface. A final seal coat of approximately 0.2 gal per sq yd covered with sand or

some other fine aggregate completes the work. It should be well broomed. The seal coat may be delayed for some time, but it should be applied before the first winter weather.

When travel plants are employed, procedures are substantially the same as for macadam-aggregate construction. But dense-graded aggregate mixtures seldom are spread and finished immediately because it is necessary to blade and harrow for some time before the mix is aerated sufficiently to



STEEL-FACED ROLLER may be used to close road's surface if there is threat of rain.

ALL PITS ARE DIFFERENT....



3-cu. yd. rapid shifter

THAT'S WHY SAUERMAN SCRAPER MACHINES ARE JOB-ENGINEERED FOR YOUR PLANT

Your deposit may require a manually-shifted tail and bridle system or it may need a rapid shifter to make the many moves necessary in shallow pit operation or handling of non-caving material. If large capacities and long hauls are involved, a Sauerman Track Cable machine may best suit your needs. In the latter arrangement, the scraper bucket is attached by chains to a carrier traveling on a track cable. The bucket conveys its load at ground level and is discharged at the dumping point by merely tightening the track cable. Bucket and carrier glide back to the digging point at high speed when brake is released.

Sauerman scrapers work equally well on hills, boggy ground or in deep water. One man controls digging, hauling and dumping from a safe location, which may be as much as 1,000 ft. from the deposit. Sauerman machines cost less than any other types of excavators of similar capacities. Operating costs are very low, because you eliminate the power cost involved in moving heavy machinery around the area. A drag scraper maintains its efficiency for many years. When parts are replaced—sheaves, clutch or brake linings—the machine is restored to practically new condition, even though it may be twenty or more years old.

Write to Sauerman's experienced engineers about your plant

They will give you specific recommendations without obligation. Request Catalog A, Drag Scrapers—24 pages of job photos and specifications.

SAUERMAN BROS. INC.

612 S. 28th AVE.,

BELLWOOD, ILL.

permit ultimate compaction. More rapid setting binders can be used, however, and the finishing operations can be completed more rapidly than with the harrow-blade method alone. The completed mixture should contain from 4 to 7% asphalt binder, depending on the character of the aggregate and the percentage of voids it contains.

Summary

For best results follow these rules:

1. Prepare a base of adequate strength, uniformly consolidated to proper cross-section and profile before placement of the final wearing course.
2. Check the distributor and travel plant frequently for accuracy. Correct proportioning of asphalt to aggregate is essential.
3. Use strong, clean and reasonably dry macadam aggregate. If necessary, stockpile aggregate to assure continuous operations. Stockpiled aggregate may be pre-coated with 1% light asphaltic material to get rid of dust, prevent subsequent wetting and so reduce delays because of rain.
4. Aerate dense-graded mixtures before spreading and compacting. This is particularly essential when MC binders are used. With MC binders the solvent content should be reduced to 8% or less before final rolling.
5. Dense-graded mixtures can be constructed full roadway width, but macadam aggregate surfacing under traffic is best done in half roadway width.

The third article in this series will appear in the November issue.



Pumpcrete, located at central mixing plant, pumps concrete 850 feet to forms. The slim pipeline can be laid wherever desired—never interferes with construction crews.



Here you see concrete pouring from the end of the pipeline directly into a wall form. Note foreman's walkie-talkie contact with Pumpcrete operator 850 feet away.



Pipeline is set in position for next section of foundation slab for filter house. Two pipelines were used, one for the filter house (foreground) and one for the pump house (background).

Pumpcrete® pipes concrete 850 ft. to forms—speeds work, cuts costs on filter plant

Placing concrete for new filter and pump house additions to the Kansas City, Missouri, water works, was a natural for Rex Pumpcrete—the pump that delivers concrete by pipeline.

23,000 cubic yards of concrete for the two buildings will be placed by The Salvatore S. Patti Company, Kansas City, contractors. The new buildings cover an area 300 by 600 feet with a total height of 65 feet. So as not to interfere with construction crews, Pumpcrete was located conveniently next to the central mixing plant 850 feet from the work area.

By pumping concrete direct to the forms, it was possible to eliminate costly preparatory work and minimize the size of the placement crew. Contrast this with the elaborate and expensive system of buggies, lifts, runways, trucks needed for conventional placement methods.

The Salvatore S. Patti Company knows Pumpcrete well—enthusiastically reports savings in time, labor and materials on this and many placement jobs it has done in the past twenty years with this pipeline placement method. Why not investigate Pumpcrete for your work? See your local Rex Distributor, or write Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wis.



CHAIN BELT COMPANY



ABC...and the Reader

BACK IN 1914—forty-one years ago—a group of advertisers, advertising agencies and publishers joined in a project that has come to mean a great deal to the millions who, like you, read business magazines. The project, initiated at a time when circulation claims were rarely verified, was intended to achieve and maintain higher standards of integrity in publishing and advertising practice by providing means to audit paid circulation. Out of that effort came an organization known as the Audit Bureau of Circulations, a voluntary, non-profit, cooperative association, known for short as ABC. Its symbol appears at the head of this page.

We are proud that McGraw-Hill publications were among the founders and charter members of the Audit Bureau of Circulations.

Today the Bureau numbers 3,670 members. These include advertisers, agencies, and publishers of newspapers, farm papers, general magazines and business journals such as this one. These publisher members hold their memberships and their right to display the ABC symbol in their publications only so long as they live up to the circulation standards that are established through the Bureau.

It is one thing to set up high standards; it is another to see that those standards are maintained. This latter and all-important function is performed by a staff of auditors maintained by ABC to check periodically on the circulation practices of the publisher members. When a business magazine, such as this one, joins the Bureau it agrees that the ABC auditors shall have "the right of access to all books and records." Their inspection may dig into the files of original subscription orders, payments from subscribers, paper purchases, postal receipts, arrears of payments, editorial expenses and many other significant items. Sometimes the auditors go behind the records and seek verification of purchase and payment from subscribers themselves.

The information thus obtained and certified by the Bureau then becomes available to the public

and constitutes an authoritative report on the publication's circulation practices.

The advertisers and agencies benefit directly from the ABC because it provides a generally recognized factual yardstick by which the circulations of member publications can be measured and appraised. Every paragraph in an ABC report on a business publication gives the advertisers data that help them make intelligent use of the publication as an advertising medium.

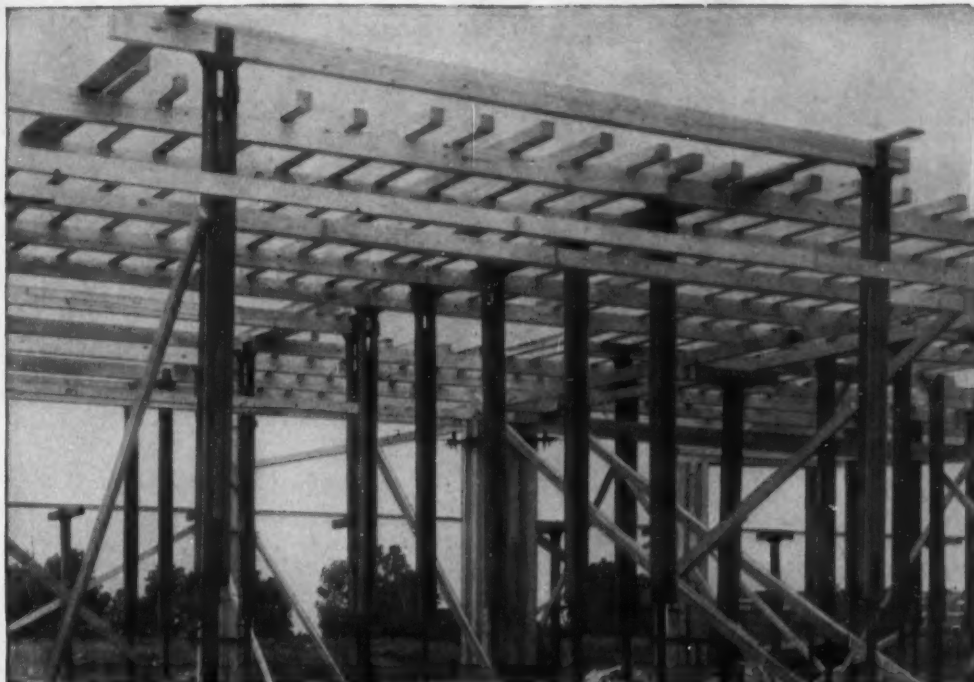
But the ABC renders a service of vital concern to the reader as well. The Bureau audits paid circulation only, and it is through this payment, whether by subscription or newsstand purchase, that the reader keeps the editorial policy of a publication responsive to his needs. His decision to buy or not to buy records his judgment on each publication, and the ABC-audited and certified circulation reports make the sum of these judgments known to all concerned.

So the editors of ABC publications must constantly keep their editorial services up to the mark if they are to survive a competition in which the reader's right to buy or not to buy is paramount. Each paid magazine or newspaper will prosper or fail as it wins or loses the voluntary patronage of thousands or millions of readers. And—the ABC is scorekeeper in this vital contest.

Thus the publisher who submits his publication to the supervision and discipline of ABC affirms in the strongest possible manner his recognition that his primary obligation is to his readers and that he owes the standing of his publication to a voluntary demand by those readers.

All this is what makes the ABC brand on a publication so important to its readers. That respected symbol, testifying to the advertising value of the publication, serves also as a constant reminder to all concerned that the reader's willingness to pay for an ABC publication is the basic reason why it stays in business.

McGraw-Hill Publishing Company, Inc.



Metal Scab & Tee Head. Scab slides down flush with top of shore head when not in use.

Note use of Symons Column Clamps.

Symons Safety Shores Cut Costs on All Shoring Jobs

Symons Safety Shores keep all shoring jobs moving on a dependable, time-saving, cost cutting schedule. Their trouble-free performance is a matter of record. Here are 4 reasons why—

SAFE-SWAY BRACING . . . easily secured at any point.

SCAB, TEE HEAD and EXTENSION . . . enable shore to fill every shoring need.

WORKMEN PREFER . . . handling this lighter, easily adjusted shore.


LIFTING JACK and ATTACHED WEDGE . . . make possible easy reshoring under heavy load.

Profit by the experience of the Construction Industry's leading builders. Use Symons Shores for those heavy load shoring jobs. There is no better way to make that tough job easy.

Send for Symons Engineering Tables for slabs, columns and beams. These tables will be a big help to your estimator, superintendent and carpenter foreman for determining forming, shoring and clamp requirements.

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RENTAL MAY APPLY ON PURCHASE—90 DAY OPTION




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Full traction while turning. This photo shows the Turbo-Dozer building up a load with the bowl tilted back in the "dig" position. As the weight of the load increases, it bears down on the cutting edge. If there's a tendency for the front wheels to rise,

the operator "feathers" the hydraulic lift-control. This action transfers the weight onto the front wheels, pulls them down firmly on the ground without lifting the bowl. Note the rear wheel steering—full traction while turning.

Exclusive power-tilting bowl. The powerful double-acting tilt cylinder is visible in this photo. The operator controls the angle of the bowl from the cockpit; he can tilt the bowl back and forth 33 degrees between "dig" and "float" while travelling. Also visible is the hub of the Clark axle; final planetary reduction takes 70% of the torque load off the shafts.

Special bowl features. Two 1½ in. holes are bored in the Turbo-Dozer's bowl for fast mounting of pusher plate. Both ends of the bowl are fitted with vertical cutting edges which are interchangeable. End bits are also interchangeable, and can be reversed when the corners are worn. The C-frame is extra-heavy-duty, and a swinging drawbar is standard equipment.



Report on the MICHIGAN TURBO-DOZER:

New dozer features 27 mph speed, power-tilting bowl, rear-wheel steer

The new 2¾ yd. capacity Michigan Turbo-Dozer combines rubber-tired speed and mobility with outstanding traction and power. Its turbocharged diesel engine develops 165 hp, with maximum rimpull of 28,000 lbs.—plenty of power for heavy dozing, push-loading and land clearing. And at 27 mph, it will run rings around any dozer on the market!

Power-tilting bowl. A powerful double-acting hydraulic cylinder tilts the bowl back and forth through a 33 degree arc. You can change the angle of the bowl from "dig" to "float" as you travel—work the cutting edge back and forth under stumps and boulders to uproot them. Two 6-inch lift cylinders give you tremendous lifting power and down-pressure—you can raise the cutting edge from 24¼ inches below ground level to 43¾ inches above.

High flotation tires, oscillating axle. Big 18.00-25 low pressure tires (nearly 7-foot tread) give the Turbo-Dozer excellent ground contact in dry, wet or sandy footing. You can cross railroad tracks or travel along the ties or road bed; you can climb curbs and drive safely on any kind of road surface. On uneven terrain, the steering-drive axle oscillates to keep both rear wheels in firm contact with the ground. With 14½ inches of ground clearance underneath, it's practically impossible to get "hung up".

Full traction while turning. The Turbo-Dozer gives you full tractive effort even in a turn. *All four wheels are always driving*, except when you declutch the rear axle for highway travel. Rear-wheel steering eliminates unnecessary tire wear—you don't brake or drag your inside wheels on a turn.

On land clearing, you can doze a load downhill, turn it into a tight spot—and still have full power to pull yourself out with your wheels cramped the way you went in. If one wheel begins to slip, a locking differential automatically applies power to the wheel with the firmest footing. Power steering is standard—you can steer with one hand!

Power-shifting, 300% torque multiplication. Clark's exclusive power-shift transmission eliminates the conventional engine clutch and foot pedal—the most notorious cause of excessive maintenance and operator fatigue. With two fingertip levers on the steering column, the operator can instantly shift between High-Low and Forward-Reverse—even when moving in either direction.

The 3-to-1 Clark torque converter gives you a steady power flow, regardless of speed. As the load gets heavier, the torque output automatically increases up to 300% at stall speed—gives you the extra torque to plow through the roughest spots. You can't stall the engine, and there's no clutch to slip.

Top speed 27 mph. The new Turbo-Dozer is 50% faster than any other rubber-tired dozer, four times faster than the average crawler. It dozes faster and travels faster, which means it will give you faster cycles going and coming. You can economically send the Turbo-Dozer on its own power to handle jobs many miles away, and you can cover more ground on any given job. But speed isn't the whole story. Once the Turbo-Dozer arrives at the site and starts to work, *it's got the muscle to do the job!*

Prove it for yourself. The new Michigan Turbo-Dozer gives you faster cycles and more yardage in every shift—more dollars of profit every day. Ask your local Michigan distributor to prove it, with an on-the-job demonstration; or write direct for detailed specifications. The Turbo-Dozer is available on the low-cost Michigan Lease Plan: no down payment, pay as it produces!

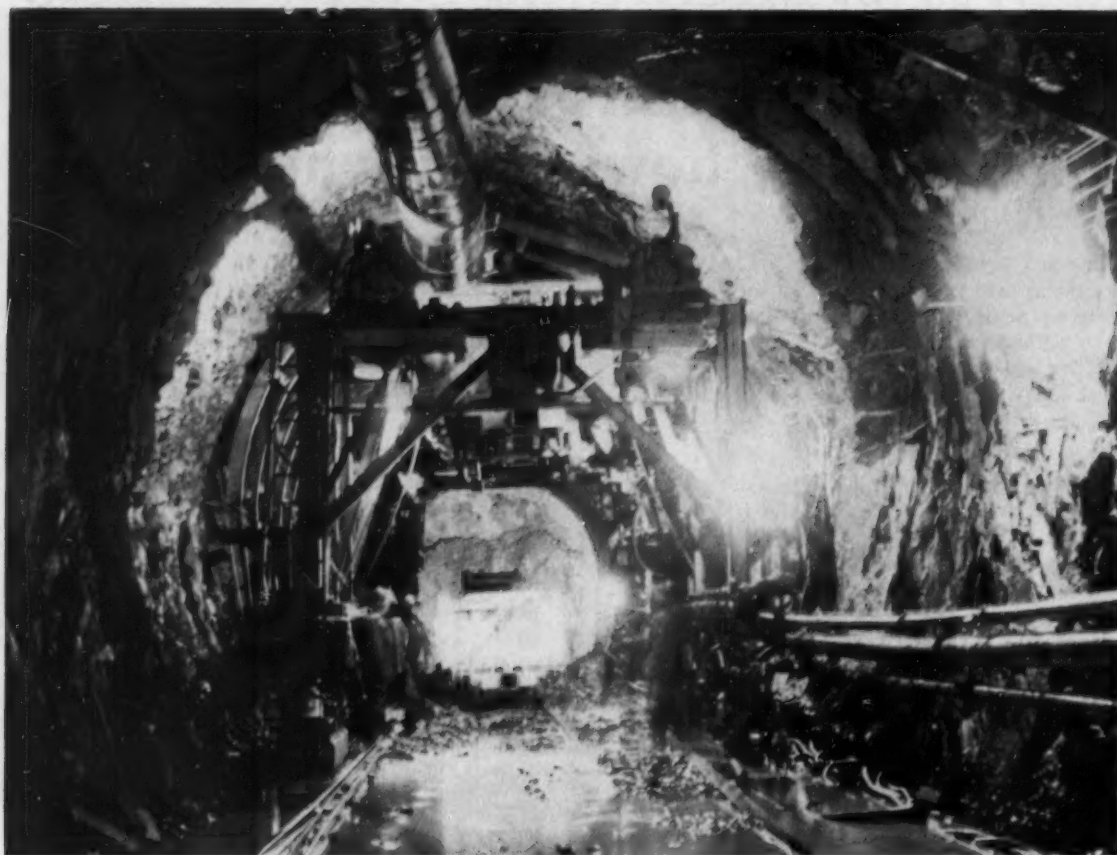
MICHIGAN is a trade-mark of Clark Equipment Co.

**CLARK
EQUIPMENT**

**CLARK EQUIPMENT
COMPANY**
Construction Machinery
Division, 380 Second Street
Benton Harbor 35, Michigan



← **Powerful "pry-out" action.** To uproot stumps and boulders, you hook the cutting edge underneath and work the bowl back and forth. As this happens, the hydraulic system automatically diverts some of the engine power from the wheels to the bowl action. In effect, you transfer just enough power to eliminate wheel spin, yet you still maintain a strong crowding action as you pry the obstacle out.



Jumbo eats through rock to drive Australian tunnel as . . .

Crews Compete to Set More Tunneling Records



DRILLS DRIVE 60 holes up to 10 ft deep for each round. Jumbo mounts 12 drills on hydraulic booms powered by air motors.

TUNNEL MEN working for a combination of U. S. contractors on the Eucumbene-Tumut Tunnel of the Australian government's Snowy Mountain Hydro-Electric Project have established tunnel-driving records unsurpassed in construction history. (CM&E Aug., p. 40)

First record came the last week in May with a 6-day progress of 402 ft in the 24-ft dia bore. Late in August this record was exceeded by a 6-day total of 405 ft. With additional headings being opened, crews of the Kaiser-Walsh-Perini-Raymond joint-venture now are competing against each other for more new records.

Material encountered is a relatively hard quartzite that breaks in rounds averaging just over 10 ft. Drilling is done by Gardner-

Denver drills mounted on GD hydraulic booms on an air-operated jumbo. Muck is removed by a Conway mucker with a 1¼-cu yd bucket loading 10-cu yd Australian-made cars working off a California switch.

With this equipment these individual records have been established:

- Maximum daily progress, 87 ft on Aug. 20, 1955—eight completed rounds.
- Fastest drilling time, 40 min.
- Fastest mucking time, 1 hr 30 min. to load 30 cars.
- Fastest time to load and blast, 25 min.

The crews are almost entirely Australians with little experience
(Continued on page 117)



Close openings with VISQUEEN film. Work in warm comfort during cold or stormy weather.



Cover bulldozers, tractors, scrapers. Leave outdoors in any weather. Save thousands every winter on your equipment storage costs.



VISQUEEN film is best permanent moisture barrier under concrete floors. Lasts as long as the concrete. Widths to 20 feet.



You can't get a better curing blanket for concrete than VISQUEEN. Use it on floors, drives, paving, roads. Get even, stronger cure.

look for this name on the selvage!

VisQueen®

For complete details, clip this coupon and attach to your letterhead.

"We could never have worked last winter without VISQUEEN film

In late October 1954 virtually every opening in the library being erected at Rutgers University was closed with VISQUEEN film. Construction proceeded throughout a very tough winter, and long, cold spring. John Coleman, general superintendent said, "It would have been impossible to work the interior of the building (not only during the winter months but the spring as well) without adequate protection. And VISQUEEN was by far the best and least expensive I have ever encountered."

important! VISQUEEN film is all polyethylene, but not all polyethylene is VISQUEEN. Only VISQUEEN has the benefit of research and resources of the VISKING Corporation.

VisQueen® film... a product of
THE VISKING CORPORATION, CM10-1410
 Plastics Division, Terre Haute, Indiana
 World's largest producers of polyethylene sheeting and tubing
 In Canada: **VISKING Limited • Lindsay, Ontario**
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Name _____

Title _____

GREAT GOING

... with rugged White power engineered right to the job!



WHEN the going's rough and the payload heavy—then is the time you're thankful for a White Six-Wheeler!

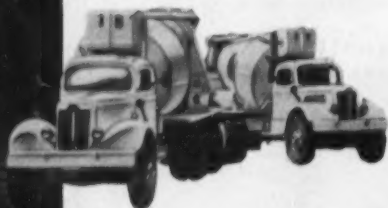
In rugged ready-mix service, for example, Whites set the performance standard because of their quality—with sturdy, double channel heat-treated alloy steel frames... powerful Mustang Engines... heavy-duty axles.

Great going! Yes, because you can carry more payload, do more work, with Whites.

It's the same, no matter what your business, because Whites are engineered right to your job.

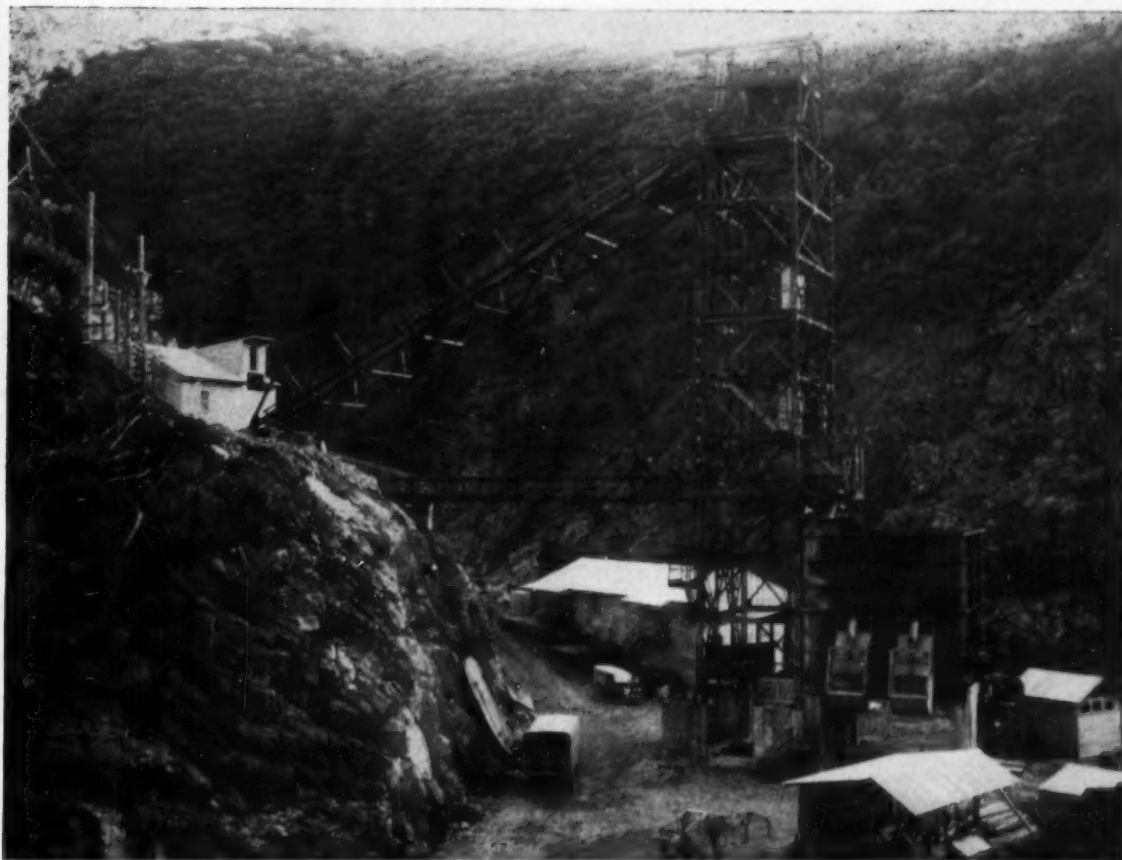
Get the whole story of White Quality from your White Representative without delay.

THE WHITE MOTOR COMPANY • Cleveland 1, Ohio
THE WHITE MOTOR COMPANY OF CANADA LIMITED • TORONTO



CONCRETE MATERIALS, INC., Charlotte, N. C., have a fleet of White WC-2264 Six-Wheelers in their service, with $5\frac{1}{2}$ cu. yd. transit mixers, used as $6\frac{1}{2}$ yd. agitators, for total payload of 26,000 lbs. R. O. Evans, manager, says, "Auxiliary transmission with both over and under drive is of great benefit. Gasoline mileage excellent. White frames and springs are outstanding. We are proud of our Whites!"

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS



HEAD FRAME SERVICES two headings at Junction Shaft where tunnel driving started in September. The shaft is equipped with one cage and a 12-cu yd muck skip working in balance. Jumbos are similar to the one that set records in May and August.

on hard rock tunnel work. Supervisors are experienced American tunnel men. For example, superintendent at Eucumbene portal is J. C. Hester, who was a walking boss for Walsh Construction Co. when Walsh crews in 1953 set the previous generally accepted record of 363 ft on the Pit 4 Project of Pacific Gas & Electric Co. in California.

Work is on a three-shift basis with nearly 70 men on the day shift and 50 men on the swing and graveyard shift.

Drill steel in use is 1¼ in. dia hollow round manufactured in Australia by Commonwealth Steel Pty. Ltd. Steel is shanked and threaded in KWPR shops. Bits are Ingersoll-Rand Carset Jack Bits with tungsten carbide insert. Bit sizes range from 1½ to 2 in.

Each round comprises 60 holes just over 10 ft deep. Protected gasless detonators are used in eleven ½-sec. delays. Powder is 40% gelignite in 1¼x8-in. plugs.

Some of the early part of the tunnel work required steel arch-



CONWAY MUCKER EXCAVATES the 24-ft dia bore tunnel. Best record is 1 hr 30 min to load 30 Australian-made cars of 10 cu yd capacity. Muckers are located at each of the three headings with spars at both Eucumbene Portal and Junction Shaft.

COMMENT

from the
BUTLER ENGINEER

**—of new world's records
... and tragedy**

There's a Butler-built, barge-mounted concrete plant moored on the waters of Sault Ste. Marie. On its stern there's a big pennant (or there should be) bearing the words "World's Champ". It's a Merritt-Chapman-Scott job—and that plant poured 6500 cubic yards in 24 hours.

To me, Miami's heart is the unbelievably handsome, seven story building Maul Industries, Inc. has built for exec personnel. A superbly beautiful example in strikingly modern design, of the use of their own products—concrete block and pre-cast concrete structural members. It's worth a trip to Miami (Florida, that is) to see it.

Going back to world's records: told you earlier of one made with a Butler Roadbuilders Plant on the Ohio Turnpike. New figures just in are even better than quoted. The Sargeant Construction Company laid 4,368 lineal feet of 24 ft. pavement 10 inches thick in a 16 hour day, 2424 batches in all. That's better than 2½ batches per minute!

A tragic story. Visited a block plant in the South. A man working inside a concrete mixer had died horribly when someone turned the power on. There should always be a master cut-off switch nearby to prevent such accidents.

Told you earlier of a plastic coated concrete pipe used in sewage disposal, appropriately named Krapcote. I was asked to suggest a name for the device which puts the plastic on ... Came up with "Kraplicator".

Be seeing you,

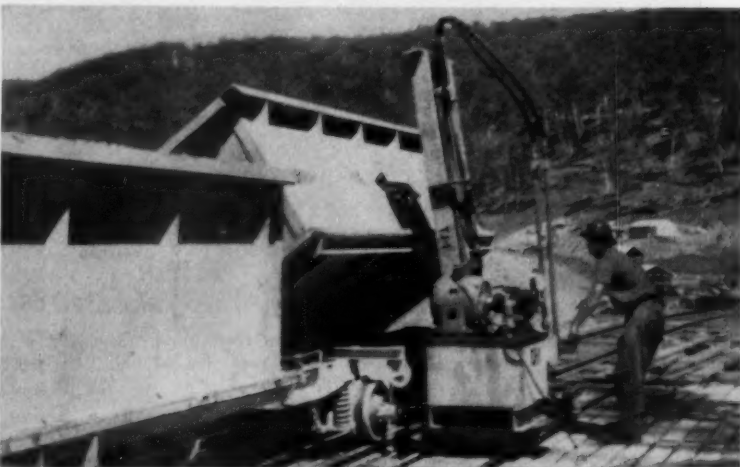
The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

TUNNELING RECORDS . . . Continued



MUCK-CAR TRAIN pulled by a Goodman electric locomotive leaves tunnel and heads for dumping area. Excavated material is a relatively hard quartzite.



AIR HOIST dumps cars at muck bin. Crews are mostly Australians with little experience on hard-rock tunnel work, but supervisors are experienced American tunnel men.

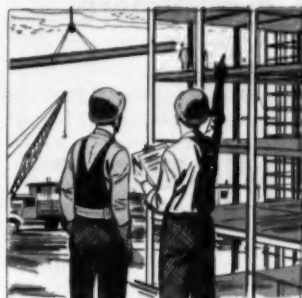


MUCK BIN HOLDS one round, then muck is rehandled by Euclid rear-dump trucks to spoil dumps near by. Crews completed eight full rounds on August 20, the record day.
(Continued on page 121)

"Here's why I stayed 70 feet above instead of 6 feet under!"

says Trofin Onofrichuk

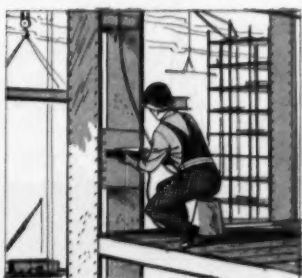
Riveter, American Bridge Division,
United States Steel Corporation



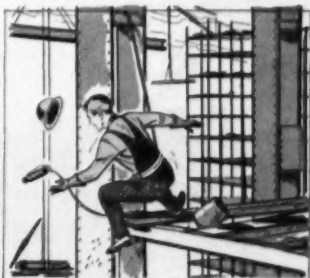
1. "The day it happened, the boss sent us up to the 70 foot level of a new Generating Station in New York to drive some rivets.



2. "When I got there, the first thing I did was secure the tail line from my safety belt to a nearby beam, then I started banging away.



3. "Some of the lower rivets were hard to reach, so I grabbed a bolt bucket from the scaffold and sat down so I could get at them better.



4. "Suddenly, the bucket slipped, knocked a plank out, and down I went —until my safety belt and line stopped my fall and started my luck."

Because American Bridge policy makes it a "must" for all employees to wear safety belts on any job above the ground, this near-tragedy was only an incident on the accident report. Mr. Onofrichuk's injuries consisted merely of "swelling of right forehead, tenderness of right shoulder." In line with American Bridge's practice of retiring all belts subject to strains of the type involved in this incident, Mr. Onofrichuk was issued a new belt. Both the belt that helped save his life, and the new belt, were developed by Mine Safety Appliances Company.

This story underscores again that full-time safety belt protection is good safety sense.



Call the M.S.A. man on your every safety problem . . .
his job is to help you



M•S•A BRIDGE AND STRUCTURAL STEEL WORKERS BELT

Designed for dependability and comfort, this belt is constructed of special-weave 2-inch cotton webbing, tested at a minimum 3200 pounds. A quick-release buckle permits the wearer to drop the belt fast, if necessary. Accidental opening, however, is prevented by a special tongue design. The leather scabbard is removable. All hardware is drop-forged steel, tested to a minimum 5000 pounds.

A complete line of M.S.A. Safety Belts is available to meet your every requirement of type and style. All cotton webbing is specially woven and treated to prevent mildew and resist effects of moisture.

MINE SAFETY APPLIANCES COMPANY

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**placing
concrete
soon?**

from California . . .
to New England
contractors everywhere
use the

CRANEMOBILE
way



Whether your next concrete placing job is like this spillway in California, or like this building in New England, you'll find CraneMobile's sturdy dependability makes all lifts easier. CraneMobiles are available in a number of sizes with crane capacities up to 25 tons and a selection of BAY CITY built carriers to meet all job requirements. Here is a rubber-tire-mounted crane packed with operating advantages and special refinements that mean *bigger value* and greater versatility on job after job.

LET'S CONSIDER JUST A FEW OF THE ADVANTAGES . . .

- A collapsible high-gantry which permits lifting maximum recommended boom lengths from horizontal without outside assistance.



255

- An accurate, fast, independent boom hoist which raises or lowers boom or boom and load by power only.
- A power load lowering device that may be quickly engaged or disengaged to handle lowering of heavy loads smoothly and with precision.

But that's only part of the story. Why not get complete information from your nearest BAY CITY dealer . . . or write direct for complete catalog.

BAY CITY SHOVELS INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS



rib supports. These were of 8x6-in., 35-lb rolled steel joists spaced as close as 2 ft. No supports were needed for the part of the work where the records were set.

Compressor house at Eucumbene portal includes six Consolidated Pneumatic tandem two-stage compressors delivering 680 cfm at 100 psi each. Ventilating air is provided by Aerex fans rated at 20,000 cfm for 45,000 ft of 36 in. dia duct. Fans are powered by 40-hp motors running at 1,440 rpm. One fan is installed at each portal, and there will be a booster fan for each 4,500 ft of tunnel.

At Junction Shaft

The 14-mi Eucumbene-Tumut Tunnel will be driven from three headings. In addition to the Eucumbene heading, at which these records were set, two headings will progress from Junction Shaft which is 10 mi on tunnel line from Eucumbene portal.

The shaft is 300 ft deep. During shaft sinking the Lidgerwood hoist was powered by a 100-hp electric motor. This is being re-



SIX COMPRESSORS DELIVER 680 cfm at 100 psi. A ventilating fan with a 40-hp motor is installed at each portal. There is a booster fan for each 4,500 ft of tunnel.

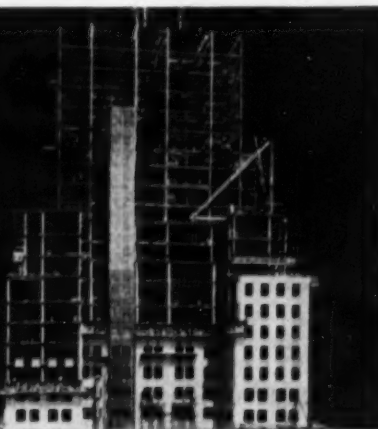
placed for tunneling purposes by a 500-hp motor that will work the hoist at 400 fpm. The shaft is equipped with one cage and a 12-cu yd muck skip working in balance. Cage rating is 40,000 lb.

Junction Shaft will be serviced by 10 Atlas model AR4 two-stage compressors rated at 760 cfm each, delivering 100-psi. Jumbos at

Junction Shaft are similar to the one used at Eucumbene portal except they are more rigid in construction and will travel slower.

Kaiser - Walsh - Perini - Raymond is a joint venture of seven U. S. firms with Kaiser Engineers as sponsor. J. H. Tacke is project manager, and C. C. Turner is general tunnel superintendent.

What's the formula for landing a job like this?



Skill, integrity and responsibility, of course. And something else—the final factor that could well tip the bid in your favor. *Low bond rates.*

Be prepared for those big jobs in the future. Ask your Indemnity Company Agent to establish your credit line now with Indemnity Insurance Company of North America. This leading independent company offers the lowest bond rates* to contractors of *skill, integrity and responsibility.*

You save money with Indemnity's low rates. And

once your credit line has been established with Indemnity, you are assured of getting bonds on future jobs without delay. See the Indemnity Company Agent.

*Sorry, Indemnity's low rates are not available in Texas and Louisiana



**INDEMNITY INSURANCE COMPANY OF
NORTH AMERICA**

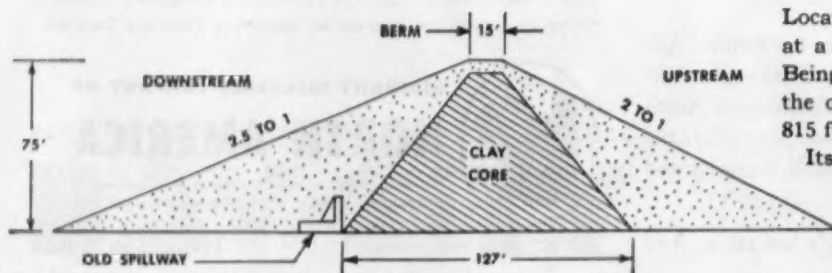
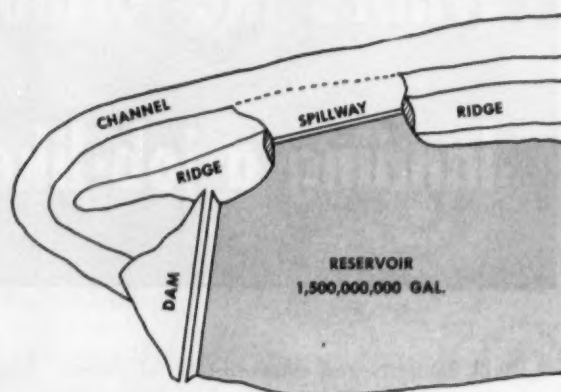
One of the North America Companies which are headed
by Insurance Company of North America, founded 1792

PROTECT WHAT YOU HAVE®

Philadelphia 1, Pa.



A year ago the work area you see above was the site of a near-disaster. Due to prolonged drought, the 50-million gallon reservoir which supplied Sylacauga, Ala. became completely emptied. For $3\frac{1}{2}$ months, 15,000 people were forced to rely on tank trucks and a nearby spring for their water. Textile, foundry, and quarry industries had to cut production. Fire danger was extremely high. By next year, though, this danger will be just an unhappy memory. A new dam will impound over $1\frac{1}{2}$ billion gallons of water in a 170-acre, 50-ft. deep reservoir. This will assure the city and its industries of enough water for 8 months, regardless of rainfall.



Location of the dam is between two hills at a bend in a winding stream channel. Being built over the concrete spillway of the old dam, the new structure will be 815 ft. long and 75 ft. high.

Its base will be 353 ft. wide; its top berm, 15 ft. Some 215,000 yds. of compacted clay will form the core; 13,000 tons of native marble, the rip-rap face.

Payscraper speed helps complete 1,500,000,000 gallon reservoir 60 days ahead of schedule

If you'd like to know more about the abilities of International's new Model 75 Payscraper, just ask Ed Bentley, veteran Sylacauga, Alabama contractor.

Mr. Bentley has been using two of these 18½-yard self-propelled scrapers for a season now. He reports they "handle better than any other scrapers I have ever had."

"LOAD FAST, WORK FAST"

"My two Payscrapers," he says, "definitely exceed our expectations in every respect. They load fast, haul fast, and spread fast. My operators like their ease of operation and comfort. I like their day-after-day trouble-free performance."

Pictured is one of Bentley's latest Payscraper jobs—

helping move 250,000 cubic yards for a reservoir dam for the city of Sylacauga. Used with a fleet of three International TD-18's, a TD-24, and a Galion grader, the two Payscrapers here combined to average 2,000 to 3,000 pay yards per day. Cycles, averaging 5,000 feet, took about five minutes. This high speed, day after day, week after week, helped Bentley complete work in four months—well under the 180 days allowed in his contract.

CALL FOR A DEMONSTRATION

Let us show you this 18½-yard "75"—or the smaller 13-yard "55" Payscraper—in action on your job. Call your International Industrial Power Distributor to arrange time and place.

● IMPORTANT CHANGES HAVE BEEN MADE

In the past year, International's research and manufacturing staffs have greatly improved the "75" Payscraper. They have raised power to 262 hp (17½ "horses" per yard of struck capacity). They have increased heaped capacity to 18½ cubic yards *without sideboards*. They have strengthened transmission, differential, and final drive, boosted rim-pull, and made over 80 more changes to boost output and lower downtime. If you want top efficiency in a rubber-tired scraper, you'll want to check the new Payscrapers. Do it now.



INTERNATIONAL HARVESTER

INDUSTRIAL POWER • MAKES EVERY LOAD A PAYLOAD



Contractor Bentley reports his 161 dhp TD-24 consistently loads 18½-yard Payscrapers in 35 to 40 seconds. "The '24' and my other IH crawlers are my top producers," says Bentley.

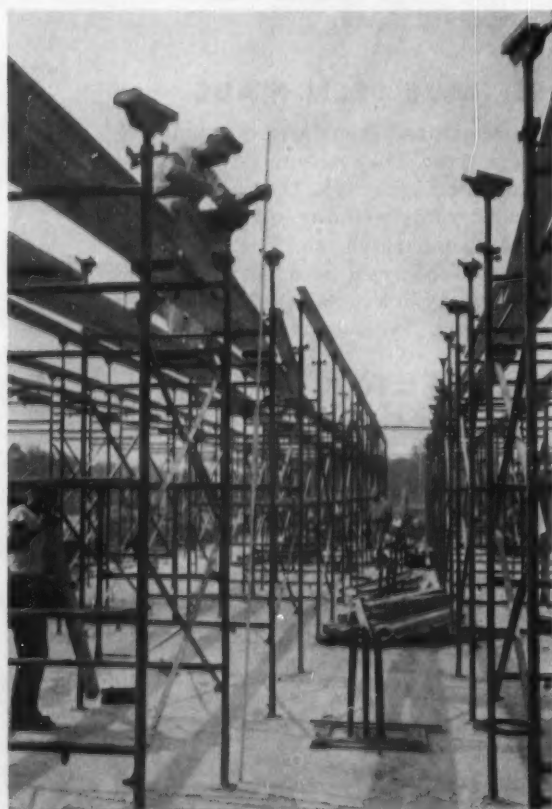


Payscraper's open-top speeds loading from TD-9 tractor-shovel. Material is muck—part of 35,000 yards stripped from old dam site by contractor's four TD-18's and 24's.



REINFORCED CONCRETE SLABS mushroom at a rate of 7,000 sq ft a day with forming method being used by Tompkins-Jones, joint-ven-

ture contractor, on the National Security Agency's \$20 million Operations Building at Fort George G. Meade, Md.



PRE-MARKED MEASURING STICK aids carpenter in bringing adjustable T-heads to proper height, ready to receive 4x6-in. steel H-beams used as stringers in place of usual wood ones.

Movable Tubular Towers Cut Shoring Costs 30%

By ANDREW BORACCI Associate Editor

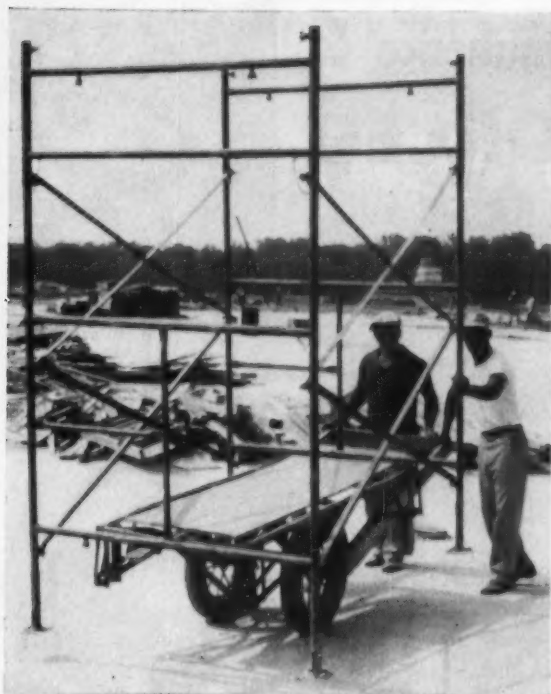
CONTRACTORS ARE SAVING 30% in the labor and materials-handling costs of concrete slab shoring in what is one of the largest uses to date of tubular scaffolding as shores. The job is the National Security Agency's \$20 million Operations Building at Ft. Meade, Md.

A joint venture of Chas. H. Tompkins Co. of Washington, D.C., and J. A. Jones Construction Co. of Charlotte, N.C., is building the four-story, reinforced concrete structure. The building measures 556x981 ft and is divided into 12 units, each fully separated by an expansion joint.

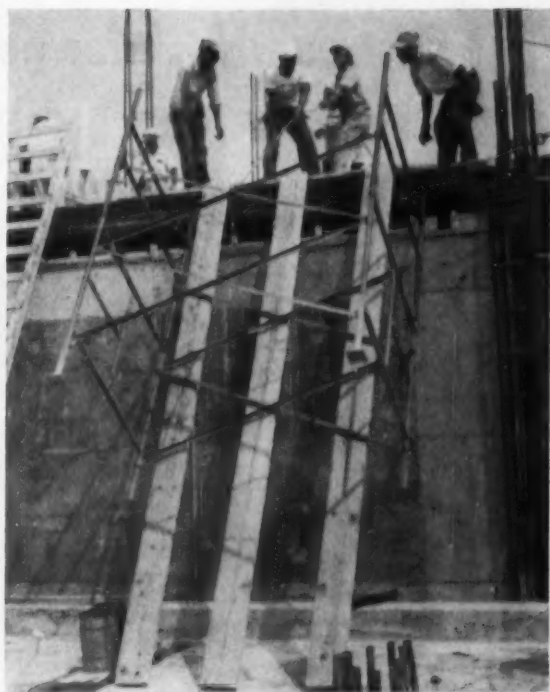
NSA wants the building completed by December, 1956. That put pressure on the contractors to find a way to pour more than 1,400,000 sq ft of slab in a little more than a year's time. Most of the flat-slab construction varied just enough to rule out large prefabricated sections of shores. So the contractors decided to use 1,270 small, lightweight, easily moved towers.

The towers are Concrete Forms Corp.'s Time-Saver tubular sectional scaffolding. They are 5x7 ft wide and can be set to the desired height. T-J has scheduled 20 uses per tower.

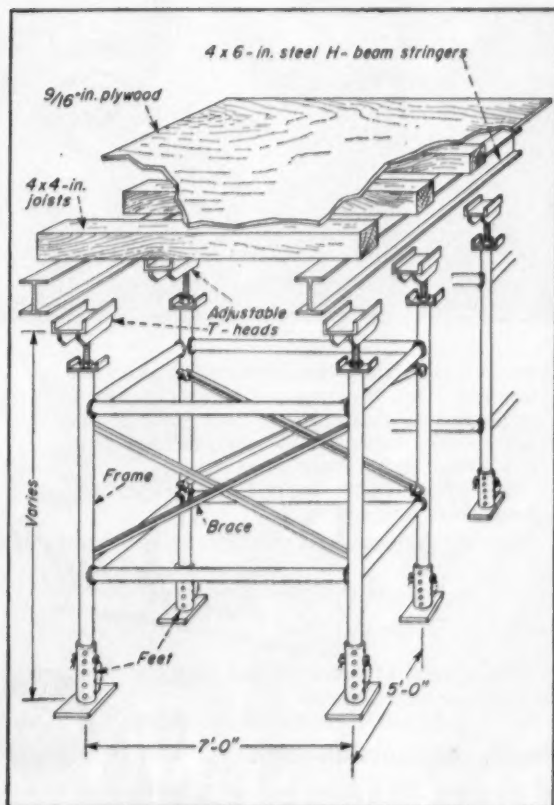
Each tower leg is capable of taking an axial load of
(Text continues on page 128)



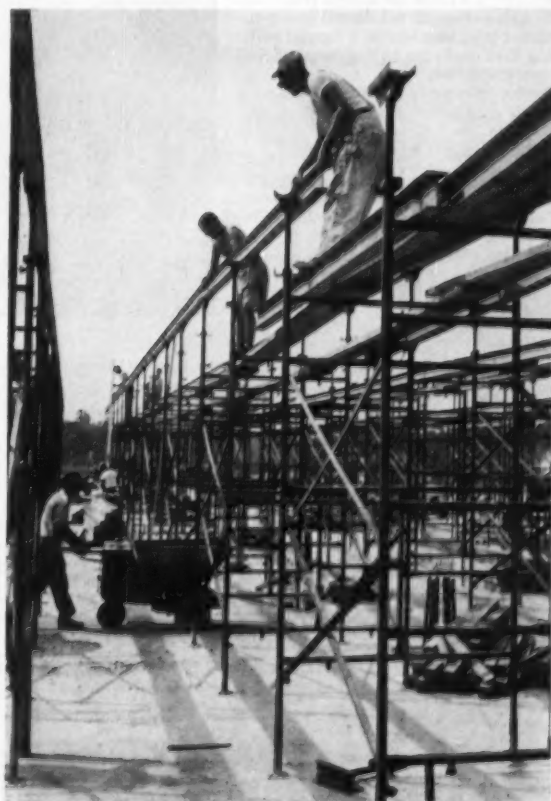
SCAFFOLD FRAMES which have been fabricated into lightweight tower are moved easily on rubber-tired buggy to location where they will serve next as shoring for concrete slab forms.



TUBULAR TOWER, with assist from workmen, slides down to next slab level with ease. Towers can be lifted to higher levels by crane or mechanical hoists without being dismantled.



FORMING METHOD, as designed by contractor, shows how easily formwork can be erected by making use of tubular sectional scaffolding. Contractor scheduled 20 uses per tower.



PRIME-MOVER, 10-cu ft motorized concrete buggy, passes through shoring while workmen set stringers on towers. Shoring permits concrete pour to continue through forming operation.

For strength . . . for permanence SPECIFY REINFORCED CONCRETE PIPE



EXTRA-EXTRA STRENGTH. This 60" extra-strength reinforced concrete culvert pipe was laid in a curved bedding that conforms to the shape of the pipe. Purpose was to distribute stresses more evenly throughout the pipe . . . assure maximum strength.

COMES THE DELUGE, this giant 84" storm sewer at Edmonton, Canada will easily carry off the excess run-off. The pipe snakes through the hills right under a new 4-lane highway. Concrete pipe, reinforced with welded wire fabric, provides the needed strength and durability of this permanent installation.



SEWERS AND CULVERTS—especially those that burrow under highways or heavily travelled city streets—need exceptional strength and durability. That's why so much reinforced concrete pipe is used.

American Welded Wire Fabric is an ideal reinforcement for concrete pipe. It gives the pipe a tough, strong backbone. The high yield strength wires, accurately spaced and welded at all transverse wires, provide special anchorage in the concrete at all welds and thus hold the

concrete tightly together so that hairline cracks won't open up. It comes in a complete range of styles and weights and is now available in circumferential wire sizes up to and including $\frac{1}{2}$ " in diameter at 2", 3" and 4" on center.

Specify American Welded Wire Fabric for long lasting concrete pipe.

BE SURE TO ASK

"is it Reinforced"

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS

USS AMERICAN WELDED WIRE FABRIC

UNITED STATES STEEL

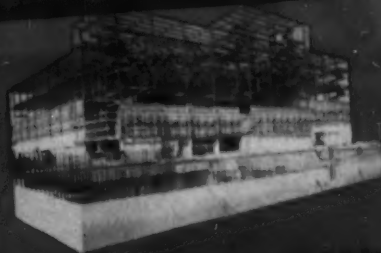


big savings of time and money!

on another job with *Whiteman* equipment



At least 20 hand buggies and 20 men would be required to haul and pour the concrete being handled by 4 Whiteman Power Buggies on the May Co. job. They're gluttons for work. Never get tired or slow down.



May Co. Department Store, 6800 Hollywood
California. Alfred C. Martin, Architect. T-S Con-
struction Engineers, Inc., General Contractors.

T-S CONSTRUCTION ENGINEERS, INC.

800 ST. PAUL AVENUE
LOS ANGELES 17, CALIFORNIA

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SECRETARY

February 14, 1955

Whiteman Manufacturing Company
3249 Cositas Avenue
Los Angeles 39, California

Gentlemen:

You will be interested in knowing how Whiteman Power Buggies have speeded up the May Company job and effected a very substantial saving in labor costs.

We have handled as much as 375 yards in 5 hours with 4 Buggies, on upper floors, with hauls averaging 225 feet. We don't know what we would have done without them.

Yours very truly,

T-S Construction Engineers, Inc.

Paul B. Tichenor
Paul B. Tichenor
President



WHITEMAN VIBRATORS are efficient, rugged, dependable. Three models, gas and electric, are "tailored to the job." Complete line of vibrator accessories.

WHITEMAN SCREEDING MACHINES do a better job in far less time. Screed to a perfect level. Save labor. Easily portable. Width adjustable from 3 ft. to 20 ft.

WHITEMAN FLOATING-FINISHING MACHINES produce a smooth, perfect slab. Job-proven for 17 years. Four models — one for any job requirement.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

SEND
NOW!

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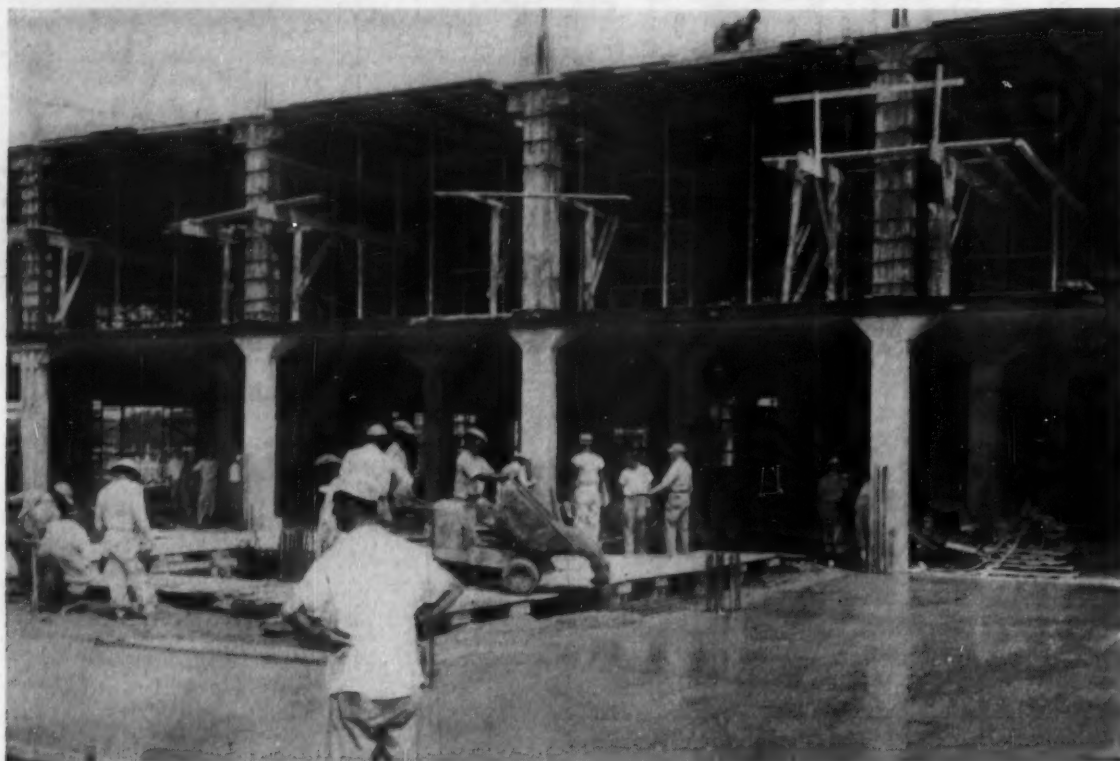
Please send prices, literature and name of distributor for ☐ Vibrators, ☐ Screeding Machines, ☐ Power Buggies, ☐ Floating-Finishing Machines.

Name

Firm

Address

City Zone State



COLUMN FORMS are braced against tubular towers at upper half of photo. Below, another buggy-load of concrete goes down. Slabs,

averaging 10 in. thick, will require a total of 80,000 cu yd before job is completed. Glascraft paper or Serviced spray cures slabs.



FORM STRIPPING is done quickly by workmen who use pinch bars to lower adjustable T-head, releasing stringers, joists and decking. Stripping average is 10,000 sq ft daily.

10,000 lb, and each tower a combined load of 40,000 lb. That gives T-J a shore strong enough to do the job, yet light enough to be carted about.

Stringers were the next problem. Wood 4x8-in. beams have a high mortality rate under normal job conditions. And on this job they would have to be used over the course of a year.

So T-J decided on 14-ft steel H-beams measuring 4x6 in. The flanges fit securely in the tower T-heads and require no additional bracing. With this rigid basic support, the substructure could be made ready for decking simply by crossing 4x4-in. wood joists over the steel stringers. The decking—4x8-ft sheets of 9/16-in. plywood—is laid across the joists and tacked lightly to prevent jarring loose.

(The only place in the forming operation where the towers did not work out was in the shoring of spandrel beams. Here, T-J employed single-post adjustable Acrow jacks.)

Stripping is simply a matter of lowering the adjustable T-head. This releases plywood, joists and stringers, and these, together with the towers, can be moved by buggy or crane to the next site.

Results on this job show how fast the method has proved to be. T-J is keeping up a steady rate of pour of 330 cu yd a day, five and six days a week. Average weekly pour is 1,700 cu yd. The job will require some 80,000 cu yd of concrete in slabs averaging 10 in. thick.

Chas. H. Tompkins Co. is the sponsoring contractor; J. Slater Davidson is project manager; I. Aldred Dill, project superintendent; Bruce Hutsler, concrete superintendent; and Gerald Wade, form design engineer.

(Continued on page 130)

"**GREAT**" for all-around utility work

says Supt. on Garden State Parkway contract



On their 14 mile section of the Garden State Parkway in Cape May County, New Jersey, Public Constructors, Inc., Pleasantville, are using a 19 mph rubber-tired Tournatractor for all-around utility work.

This 208 hp tractor works all over their widely-scattered 2¼ million-yard sand job. It often moves ahead of the company's 33 scrapers to clear trees and brush and handle pioneer dozing. At times, it is used to level cuts and fills and to doze around bridges and culverts. Because of its speed and maneuverability, tractor-on-rubber performs these utility assignments without interfering with production dirtmoving.

Besides leveling work, Tournatractor is also used to push-load some of the contractors' 11 C Tournapulls. Where material is pure white sand, tractor's fast pusher-service loads the 16-yd. "C's" in as little as 45 seconds.

Used for other scattered jobs

Tournatractor is always ready for emergency calls, too. Jobs 5 miles away can be reached in 20 minutes (or less) due to its 19 mph speed. Cleaning haul roads and dozing fill on distant sections of the job are handled quickly and efficiently. Paved highways present no travel problems for the tractor-on-rubber. It goes everywhere under its own power...

needs no blocking, planking, trailer-loading and unloading. For all around utility service, it "gives a great performance day after day," says Supt. John Franks.

Discover for yourself why the fast, mobile Tournatractor is ideal for utility-type assignments, as well as major tractor work. Phone or write for a demonstration on your job, today. There's no obligation.

Tournatractor, Tournapull—Trademark Reg. U.S. Pat. Off. T-837-H-b



Tournatractor, with its 4-wheel drive, push-loads 16-yard C Tournapull in 45 to 60 seconds. Big low-pressure tires provide plenty of traction and flotation even in this poor, sandy footing.



LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

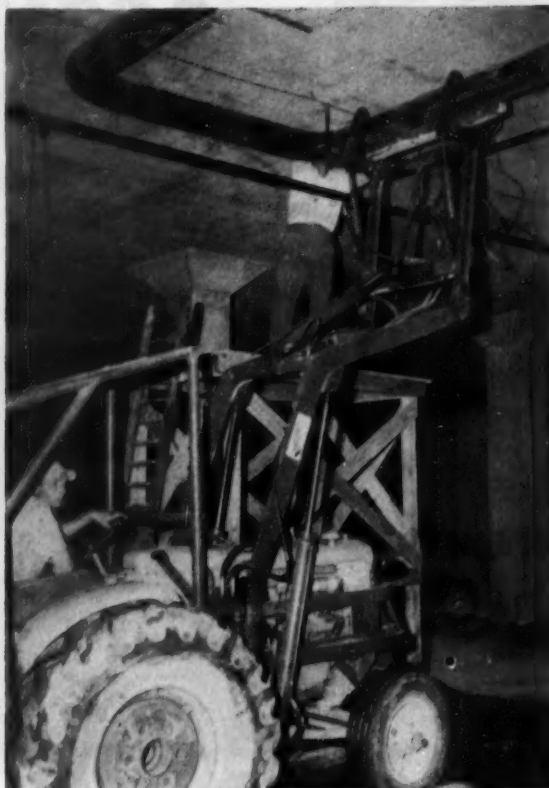
A Subsidiary of Westinghouse Air Brake Company

Gimmicks Speed Production

• Ingenuity of general contractors didn't stop with the imaginative use of tubular scaffolding towers as shoring at their Fort Meade, Md., job. This cost-conscious organization put together many interesting money-saving gimmicks, four of which are pictured below. The manner in which one of the devices, the Bo'suns chair, was used was a novel switch from its usual painting jobs.



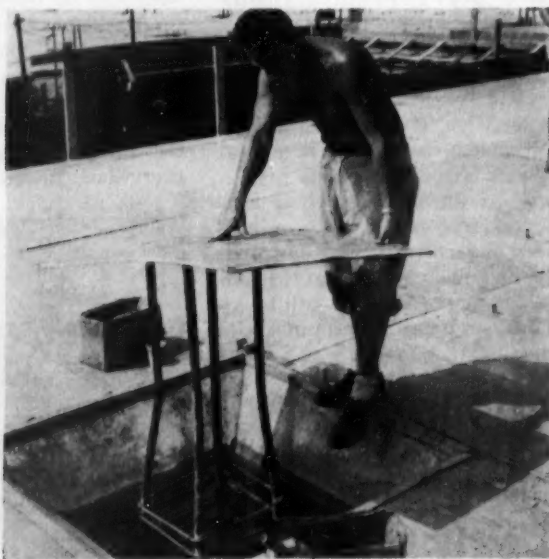
TRICKY CURB FORM BRACE made from plywood and 2x2-in. stock solves the pesky problem of bracing curb forms around well areas. A workman devised the brace, which has one leg extending into the well while the other sits on the concrete slab. The legs are held firm by a wide cutting of plywood. Placing them 5 ft apart leaves ample room for workmen to trowel and finish curb.



TWO LARGE CLAWS replace the bucket on a Henry front-end loader and give plumbers a means of holding large pipe in place while it is secured to slabs overhead. The lifting device is hydraulically operated and is mounted on a Minneapolis-Moline tractor. Steel claws made unnecessary the extensive shoring which normally is used to support such pipe.



BO'SUNS CHAIR is used in a novel way not planned by its manufacturer, The Patent Scaffolding Co., who designed rig for operation on petroleum tanks. Chair provides cement finishers with a sturdy scaffold while they rub and point up exterior concrete columns and spandrels. Rig is raised by direct ratchet drive and lowered by worm and gear. Chair is suspended by steel cable.



TRANSPARENT BLUE-PRINT COVER affords protection to prints from water damage and workmen's perspiration. Print is first mounted on sheet of cardboard then later covered with Muth No. 500 perspiration-proof acetate paper. Print covering is very much like that used by pilots to protect their navigational charts from similar damage. Every field print is Acetate covered.

Shortcuts to quicker, lower cost compaction

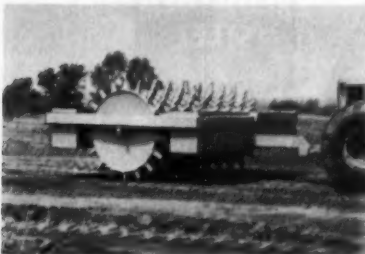
Earth swells when excavated. This "swell" varies from a low of 5 to 15% in sand or gravel, to a high of 30 to 62% in clay. When put into the fill, earth must usually be packed down to somewhere near its original volume.

Modern rubber-tired, self-propelled dirmovers can help you achieve compaction results quicker and at lower cost. To help you meet compaction standards quicker and easier, here are some shortcuts:

1. Spread "on the run". Best spreading results are obtained when travel is at speeds corresponding to the rate of material flow from the scraper. Spread should be made within a distance of 65 to 100 feet and be completed in 30 seconds or less. This insures uniformity.

2. Build up your fill in thin, uniform layers 4 to 12 inches thick. The thinner the fill is laid down the easier it is to compact.

3. Blade the fill with a bulldozer or motor patrol. If neither of these tools is available, your self-propelled scraper can do double duty. Drop your blade with apron closed on every third or fourth return trip and level the fill. Your scraper will do almost as good a job of blading as a motor patrol.



Sheepsfoot Rollers with external ballast boxes and provision for drum loading have a wide range of foot pressures to meet various soil and compaction conditions.



Compaction during normal travel across the fill is one of the bonuses you get at no extra cost with rubber-tired dirmoving equipment.

The Sheepsfoot Roller is the most popular compacting tool, although rubber-tired and vibrating tampers are sometimes used. Before you begin to haul across a fill, be sure the earth is moist enough to pack. Sprinkle if necessary. A correctly designed Sheepsfoot will work the layers together and mix the water into the ground better than any other compactor.

A Sheepsfoot Roller seldom "walks" completely out of the foot depressions. It leaves the top 2 to 5 inches in a loose binder layer which is compacted at the bottom of the next lift. When the roller does "walk" out completely, loosen the surface with a disc harrow to maintain a good bond between lifts.

By carefully routing your self-propelled scrapers or rubber-tired tractors across the fill, you speed up compaction. Rolling action of the broad, low-pressure tires tends to

confine and compact the soil under the tread rather than displace it. In its normal travel across the fill, the big rubber tires of modern earthmoving equipment may give as high as 80 to 85% of specified compaction. This is important as the fill nears completion, because rubber-tired machines will pack the top 2 or 3 inches that remain loose behind the Sheepsfoot Roller.

Success or failure of roads, airports and other structures built of earth depends on the condition of the fill. Proper compaction permits surfacing materials to be placed immediately and accurately. It helps make the fill watertight and allows it to carry heavier loads. If properly tracked on the fill, man-high 2-foot wide earthmover tires do an excellent job, often comparable to special compaction tools. Specified or not, compact every fill whenever possible. You'll do a better job of dirmoving than the other fellow!

G-742-OP-bv



LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

TO MINIMIZE ROCK SLIDES

Bolt the Rock!



Showing Bethlehem Rock Anchor Bolt as it appears when driven in hole. Wedge is forced deep into 6-in. slot, spreading bolt-end. Bolt is used with 6-in. or 8-in. square rock anchor plate.



This typical installation shows how Bethlehem Rock Anchor Bolts reinforce the rock formation, preventing rock layers and boulders from sliding.

Here is a simple, practical way to safeguard traffic from rock slides at dangerous locations.

Bethlehem Rock Anchor Bolts help prevent rock slides by bolting together the stratified slabs of rock, stabilizing the slope. They reinforce the rock formation, making it virtually impossible for layers of rock or individual boulders to slide or fall. They are particularly effective in cuts with high banks, or on steep hillsides.

Bethlehem Rock Anchor Bolts come in lengths of from 2 ft to 10 ft. One end of the bolt has 5 in. of 1-in. rolled threads. The opposite end contains a 6-in. centered slot, which forms the equivalent of two half-rounds. The slot is made by forging. As none of the original, cross-sectional area is lost during the forging operation, the slotted portion is as strong as the body of the bolt.

How Bolt Is Installed

After the length of the bolt is determined by geologic conditions, a 1¼-in. hole is drilled in the rock, to a depth of about 3 in. less than the length of the bolt. A wedge is started in the slot. Then the bolt is inserted, wedge-first, into the drilled hole. Using dolly to protect threads from damage, the rock drill drives bolt to refusal. Wedge is forced deep into slot, spreading bolt-end against sides of hole. Rock anchor plate is then bolted against rock by tightening nut with pneumatic impact wrench.

If you would like a copy of our two-color booklet on rock anchor bolting, write to the nearest Bethlehem office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM ROCK ANCHOR BOLTS



Beats winter shutdown

with 2 C Tournapulls...

How good are Tournapulls for bad weather work? Here is a report of one contractor's answer:

Winter was closing in when R. Marino Construction Co., Delavan, Wis., contracted to move 30,000 yds. of clay on grading of factory site near Milwaukee. To lick the job in a hurry, they drove 2 C Tournapulls from Janesville... made the 70-mile trip over busy highways in 3½ hours.

Self-load in topsoil

Crawler-pusher, which was being hauled in from Janesville, had not yet arrived when the Tournapulls reached the job. To save time, Tournapulls self-loaded to strip topsoil from the 700 x 515' site. They averaged 7 pay yards per load. "Very satisfactory output for self-loading," said Company President Bob Marino.

Production increased, of course, when Tournapulls had pusher assistance. One "C" averaged 12 pay yards per

load; the other, with built-up scraper, averaged 13½ pay yards. Time studies made on typical 650 to 1000' cycles show each machine delivered 15 loads per 50-minute hour. Combined hourly production was 382 pay yds. Contractor reports each C Tournapull moved as much as 21 to 24 loads per hour on similar cycles when working conditions were ideal.

Haul 362 yds. hourly

With this rate of production, Tournapulls completed entire job in 83 working hours. This includes 10 hours of self-loading, 2 days (out of 10) of below-freezing temperatures (down to 5°), and 7 days with some rain or snow. Output for all conditions averaged 362 pay yards per hour for the 2 units.

Like Marino Construction Co., you will find Tournapulls deliver at lowest-net-cost-per-yard under any working conditions. Ask for all the details. There's no obligation.

How Marino set up his job to lick some common problems

Why he selected Tournapulls

"We took this job late in the year," Marino explains. "It was important to get the dirtmoving done fast so the fill had a chance to settle over winter. We knew that if we could get good, dependable equipment in there, we'd be all right. After seeing and hearing about hundreds of jobs, I had a pretty good idea what the Tournapulls would do. I knew, for instance, they could lick many tough conditions. I didn't know what other machines would do, so why shop around and take a chance on other equipment? So Tournapulls it was — and they worked out fine!"

How he removed trees

After stripping topsoil, two large trees had to be removed from the site. One was an old oak 2' in diameter. First, Tournapulls cut around the base to sever the long roots. Then, operators attached a cable to the tree and one of the "C's" pulled it over. For disposal, the 2 Tournapulls and the crawler dragged it up a steep hill.

Prevention of freeze-up

Marino explains, "Instead of grading evenly along whole cut, we shelved it. This way all of it wouldn't freeze in case of bad weather."

Work after rains

Says Marino, "I'm convinced that every day Tournapulls are being used in more places where you wouldn't think they could work. For instance, we moved dirt right after heavy rains. The Tournapulls just skimmed off a layer or two of mud and then got rolling."

Compaction without rollers

Property owners, C. Hennecke Co., requested compaction comparable to making 6 passes over each 6" layer of fill with a sheepsfoot roller. Marino promised that compaction through proper use of rubber-tired machines. "We told them we'd level the fill with the motor patrol as the Tournapulls dumped each load. We assured them they'd get good compaction because the machines would be rolling over it constantly. We did that and their engineer said compaction was perfect. So, by using Tournapulls, we saved cost of having another tractor and a roller... and Hennecke Co. got the job done cheaper and just as well."

Tournapull—Trademark Reg. U.S. Pat. Off. P-623-B-6



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

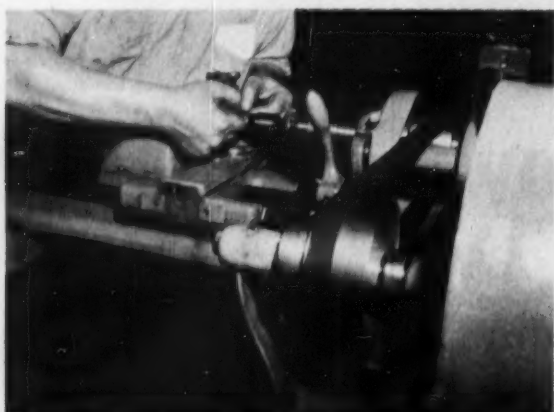
A Subsidiary of Westinghouse Air Brake Company



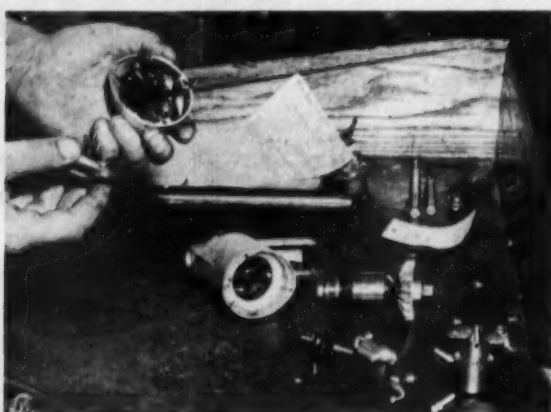
DISASSEMBLING ELECTRIC TOOLS for periodic maintenance requires little skill. Repairer working on B&D 1/4-in. drill is removing carbon brushes. Drill chuck, switch and handle lie on bench.



SIMPLE CLEANING of accumulated dirt and grit from parts adds years to the life of machines. Brush helps get solvent into corners. Blow dry with compressed air or allow to dry in air.



SCORING OR HEAVY CARBON STREAKS on the commutator from brushes are removed by rubbing lightly with fine sandpaper—not emery cloth. Brush-commutator troubles cause 75% of tool failures.



LUBRICATE GEARS AND BUSHINGS when reassembling tool. Fill the gear case about half full with grease, packing about the gears. Some heavy electric tools require frequent lubrication.

Black & Decker Mfg. Co. Photos

SIZE OF EXTENSION CABLE FOR PORTABLE ELECTRIC TOOLS

Based on current equivalent to 150 per cent of full load of tool and a loss in voltage of not over 5 volts. This table for 115-volt tools. For 220-volt tools use wire size corresponding to an extension length of one-half the contemplated length.

Full-load ampere rating of tool	0- 2.00	2.10- 3.4	3.5- 5.00	5.10- 7.0	7.10- 12	12.1- 16.0
Distance (one way)	Wire size (B & S gauge)					
25 ft.	18	18	18	16	14	14
50 ft.	18	18	18	16	14	12
75 ft.	18	18	16	14	12	10
100 ft.	18	16	14	12	10	8
200 ft.	16	14	12	10	8	6
300 ft.	14	12	10	8	6	4
400 ft.	12	10	8	6	4	4
500 ft.	12	10	8	6	4	2
600 ft.	10	8	6	4	2	2
800 ft.	10	8	6	4	2	1
1000 ft.	8	6	4	2	1	0

Note—If voltage is already low at the source (outlet) have voltage increased to standard, or use a much larger cable than listed in order to prevent any further loss in voltage.

Regular Care Multiplies Electric Tool Life

THE AVERAGE CONTRACTOR buys an electric tool and gives it to one of his workmen with little or no instruction in its use. The man takes it out on the job and puts it to work. Some days or months later he brings it back and says, "This thing won't work. How about giving me another one."

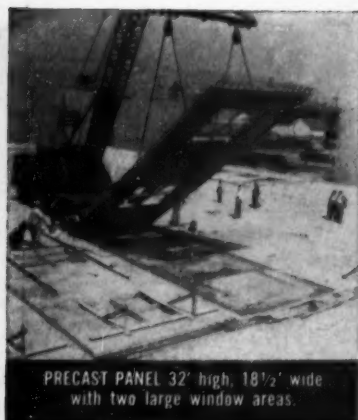
Often a little simple preventive maintenance would have kept the tool in operation several times as long. Even more often the tool is not in need of major repair, but has been made inoperative by some minor matter. Why not try these few simple checks before going to the time and expense of a factory repair?

1. Is the power supply dead? Check for blown fuses.
2. Is the tool receiving power? Check for good contact of plug and receptacle, bent prongs and loose wires. Check to see that any extensions are in good

(Continued on page 138)

SUPERIOR

Complete Accessories Plus Experience on Tilt-Up Jobs!



PRECAST PANEL 32' high, 18½' wide with two large window areas.



TRUSS has 60' span at top



114,000 LB. SLAB being positioned



PANEL with door and two window areas

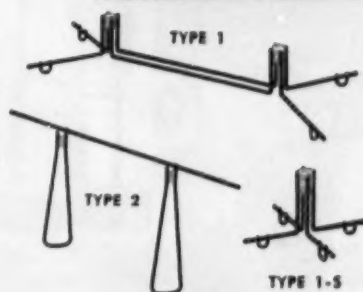
On every Tilt-Up job the proper type of Pick-Up Inserts and Brace Anchors as well as their location in the slab or precast structural member are of prime importance in order to withstand the stresses occurring when *tilting, lifting, and positioning*. As pioneers in this field, SUPERIOR has developed various types of accessories and correct procedures resulting from the experience of thousands of job applications.

SUPERIOR accessories are designed for fast and efficient handling of all types of precast panels and structural members. The Pick-Up Insert provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. Brace Anchors secure the temporary bolts by which the Braces are attached. The exclusive pivoting action of the adjustable Braces permits quick positioning and alignment of panels. Braces are assembled with 2 x 4's or pipe of lengths to fit job conditions.

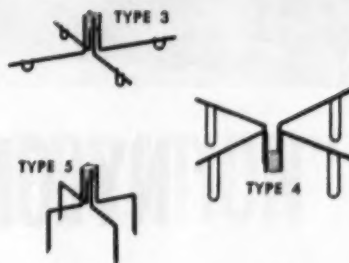
The many types of SUPERIOR Inserts, Anchors, and Braces for every job condition together with complete layout service provide a combination which offers safe and efficient handling of precast panels and structural members.

For further details refer to Sweet's Catalog or send for BULLETIN TU-3.

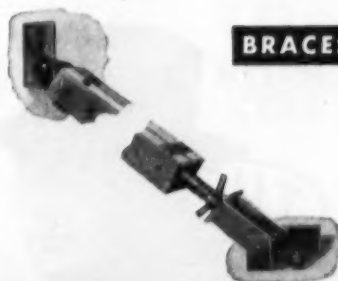
PICK-UP INSERTS



ANCHORS for BRACES



BRACES



SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

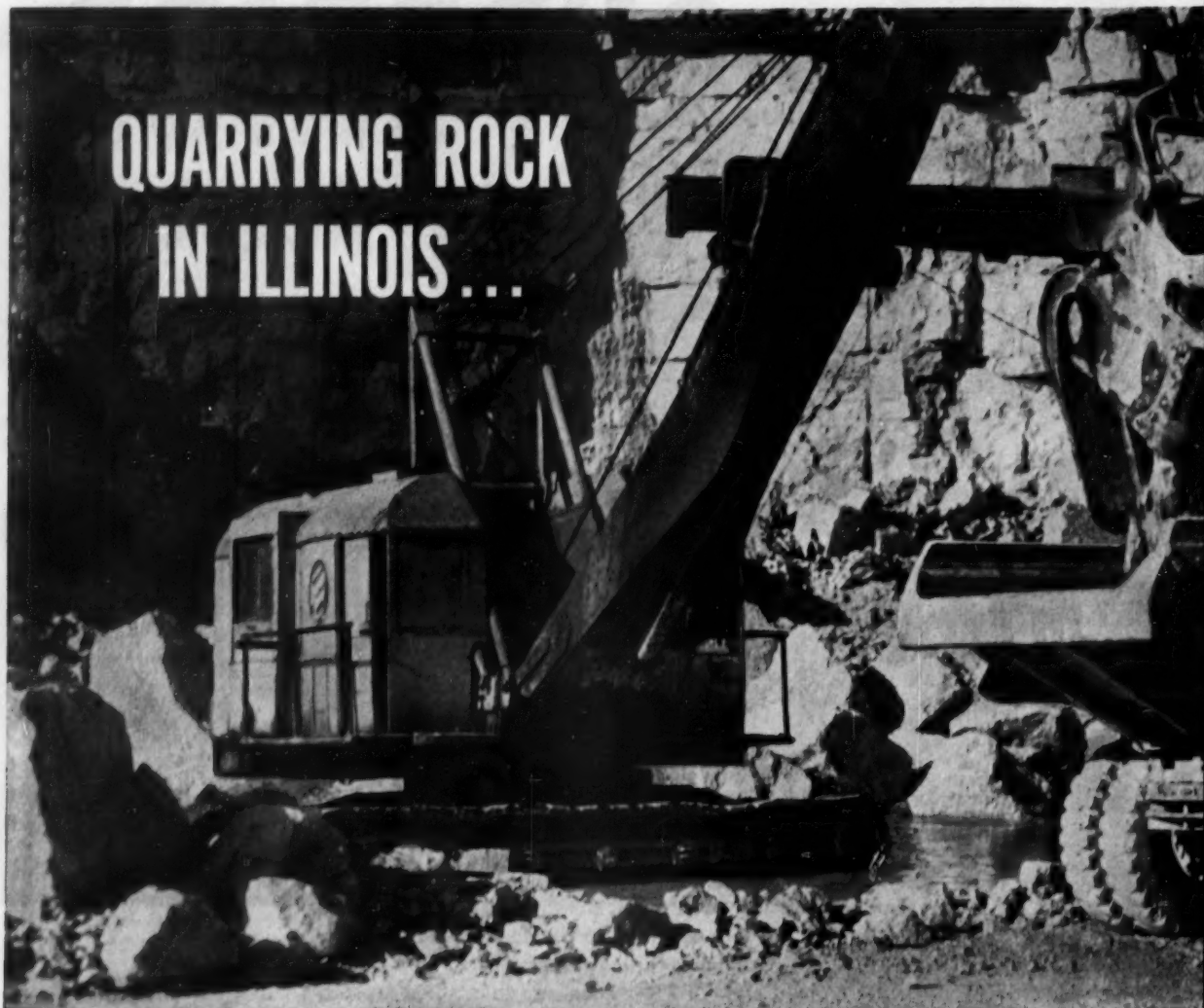
New York Office

1775 Broadway, New York 19, N. Y.

Pacific Coast Plant

2100 Williams St. San Leandro, Calif.

QUARRYING ROCK IN ILLINOIS...



"NYLON CORDS HAVE ELIMINATED

says **GLENN BENEDICT,**

Master Mechanic, Consumers Co., Chicago, Ill.



"Rock-quarry service calls for tires that can take it. For one thing, the trucks are springless. This means the tires take all the flexing when the trucks are loaded. And then there's the trip to the crusher, lugging 15-ton payloads over rough quarry bottom and unsurfaced roads. Our trucks roll 8 hours a day, 6 days a week, averaging 7 trips to the crusher an hour. Tires really take a beating. We used to have a lot of trouble.

"Then in 1950 we started using nylon cord tires. Now we've got a 95% nylon cord quarry fleet, and soon hope to make it 100%. We've found nylon cords are just the thing for rugged quarry duty. They've completely eliminated bruise breaks—a big safety factor on dangerous quarry roads. No more moisture

YOU'LL FIND NYLON IN PASSENGER-CAR TIRES, TOO! Impact-absorbing nylon cords mean extra protection against blowouts . . . greater safety on any road.



BRUISE BREAKS IN OUR OPERATION"

deterioration, either. Even when water gets in through rock cuts, it doesn't hurt nylon. Best of all, we're getting 3,000 to 5,000 hours of service from our nylon cord tires—a 10-15% gain over ordinary tires."

For ten years Du Pont and leading tire manufacturers have been working together to perfect nylon cord truck tires. Now actual road experience proves nylon offers extra protection against tire failure. Truck users' reports show nylon cord tires mean fewer road delays, more mileage, more recaps—lower cost per mile.

Nylon has greater tensile strength, flex and abrasion resistance than any other cord used in tires. Nylon virtually ends cord ruptures caused by bruise breaks. Moisture seeping through cuts doesn't damage nylon. Nylon can take the hottest road temperatures you'll ever encounter in normal operations.

Prove to yourself that nylon cord truck tires give substantially lower cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes the tough nylon yarns, does not produce tires.)

**DU PONT NYLON
FOR TIRE CORD**



REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

FREE BOOKLET on nylon tires—write for your copy. Textile Fibers Dept., Room 2494, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.



Picking Up the Pieces After "Hurricane Hazel"

MYRTLE BEACH, SOUTH CAROLINA—Necessary repair work after a recent hurricane included: (1) Build a sand bank to save the shoreline. (2) Gather and load sand to re-build roads. (3) Bulldoze new roadbeds. (4) General cleanup. All of this heavy work was in soft, shifting sand.

A husky Sherman Front End Loader, mounted on the economical Fordson Major Diesel Tractor, finished these jobs in record time. "Tailor-made" for Fordson Major wheelbase and tread, this loader features proper distribution of weight and loading stresses and gives the best traction in "rough going." A full-length mounting sub-frame reinforces the entire tractor and minimizes the effect of strain and shock. Rear axle supports reduce side sway when loading or carrying, making the entire unit more rigid. This eliminates side slippage when dozing or filling the bucket, also lets the bucket be filled with less power and less strain on clutch, steering gear and operator.

Various attachments adapt the Sherman Front End Loader to many earth-moving, excavating and loading jobs. Two models available . . . up to 2500 pounds bucket and 4500 pounds breakaway capacities. Ask your Ford Tractor Dealer for a demonstration, or write us for Bulletin 824.



*Manufactured Exclusively for
Sherman Products, Inc. by
Johnson Hydraulic Equipment Co.,
Minneapolis, Minn.

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ELECTRIC TOOLS . . .

Continued from page 134



FACTORY-TRAINED MECHANICS at manufacturers' service branches across the country are equipped for more complex repairs.

condition and have not been broken by twisting or kinking. Are the extensions the proper size to carry the load without objectionable voltage drop? (See table, p 134)

3. Check the voltage specifications on the tool's nameplate with the voltage of your power source.

4. Check the carbon brushes. Experience shows that 75% of portable electric tool failures are due to lack of attention to carbon brushes. Are both brushes touching the commutator? If brush springs are weak, the brushes may not be contacting properly. Remove them and stretch the springs slightly. Brushes worn past the half-way point may be exposing the embedded copper wire conductor and shorting out the motor. Replacement with fresh brushes will prevent this.

5. Is the switch operative? After carbon brushes, switches are the most likely source of trouble. Replacement switches are available for most tools.

Repairs beyond this usually require a trained repairman and are best done by a manufacturers' service branch. But daily care by the user can greatly extend the useful life of a tool.

Wipe the entire tool clean at the end of each day's work. Clean the main housing by blowing out the dust and grit with an air hose. If no compressed air is available, a vacuum cleaner will serve as well.

The tool motor should be running while the air is being blown into the air vents. Unless this is done, dust and grit in the main housing may clog the commutator, causing shorts. Dirt may work into the gears or other moving parts, scratching or scoring them, and possibly requiring expensive gear replacement. Keep cutting edges sharp and clean. A dull or dirty cutting tool will tend to overload the motor causing overheating and consequent motor failures.

Heavy tools like the electric hammers require periodic lubrication during the working day. The manufacturers' instruction books indicate the oiling points and lubrication procedure.

In addition to this minimum daily care, preventive maintenance at regular intervals can greatly extend the useful life of electric tools. Depending on the use they receive, large electric drills, sanders, saws and screw drivers should be inspected thoroughly after 100 to 120 hr of use. Electric hammers on heavy-duty masonry and demolition work require checking after 40 to 50 hr. Light tools, like 1/4-in. drills, however, may remain in use 150 to 200 hr without other than routine daily care.

A Good Program

At regular intervals, based on the above experience, or as may be convenient between jobs, a good preventive maintenance program should include the following:

1. Disassemble the motor, inspecting for signs of wear. The instruction book for your tool will give the exact procedure. It generally goes like this:

(a) Remove cutting tool and holder (saw-guard, drill chuck, etc.)

(b) Remove attachment screws and lift off gear housing.

(c) Remove carbon brushes and inspect for wear. Then remove the armature by pulling out through the front of the case. Remember to remove the carbon brushes before pulling out armature. Brushes are held in position by the commutator which forms the rear end of the armature. They will collapse inward upon its removal. Armature removal in electric hammers is a difficult job and should not be attempted by inexperienced persons.

(d) Clean all dirt and grit from gears, gear case, armature and air
(Continued on page 142)



Use This Actual Job Story for an Excavating Equipment Check List!

This one water line job demonstrates a combination of features that *only* the Sherman Power Digger offers every operator of excavating and trenching equipment.

Check this performance: (1) The machine has under-dug the curb without damage to the curb or sidewalk. (2) It has trenched through rocks and roots. (3) It is digging a bellhole in the street. (4) The excavation is 9 feet deep. (5) The tractor-mounted digger has operated over the curb, sidewalk and street without damage to paving.

And the Sherman Power Digger offers even more advantages to the operator who wants the savings of mechanized excavating. It's practical even on the smallest jobs, since it releases heavier equipment for bigger jobs . . . yet it digs at a fraction of the time and cost of manual labor.

The machine digs as deep as 10 feet below ground . . . in mud, hardpan, shale, oiled roads, blacktop and stony ground. Initial cost is surprisingly low, maintenance simple and inexpensive. Ask your Ford Tractor Dealer for an on-the-job demonstration, or write us now for Bulletin No. 821.

*Designed, Engineered and
Manufactured Jointly by
Sherman Products, Inc.,
Royal Oak, Michigan,
Wain-Roy Corporation,
Hubbardston, Mass.

Patent No. 2-303-852
Other Patents Pending

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ADD PUSH... SUBTRACT FUEL!

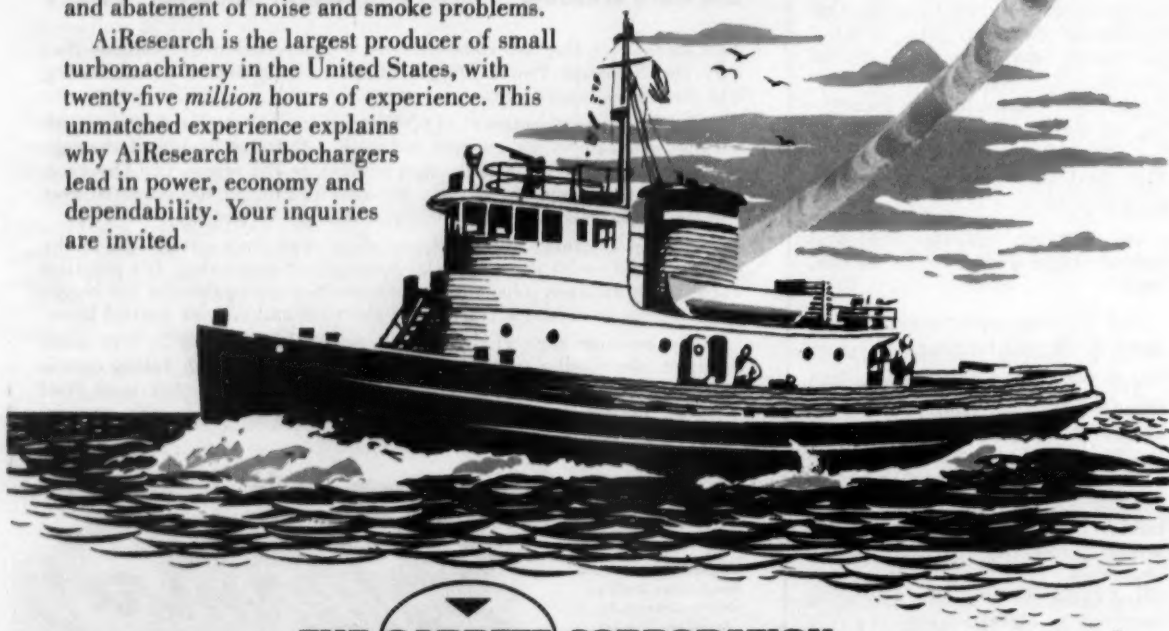
AiResearch Turbochargers give your diesel far greater power while actually decreasing fuel consumption, noise and smoke!

In mobile diesel engines, where size, weight and fuel capacity must be limited, AiResearch Turbochargers add more power per inch, pound or gallon of fuel than any comparable installation.

An example is the remarkable success achieved in the recent application of these power packages to Caterpillar diesel machinery.

Equally impressive power increases can be achieved in the application of AiResearch Turbochargers to stationary diesel equipment. Here, the outstanding benefits added to the output boost will be lower operating costs and abatement of noise and smoke problems.

AiResearch is the largest producer of small turbomachinery in the United States, with twenty-five *million* hours of experience. This unmatched experience explains why AiResearch Turbochargers lead in power, economy and dependability. Your inquiries are invited.



AiResearch Industrial Division
9225 Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

On schedule . . . through the winter . . .



Christopher Columbus Houses, Newark, N. J., as of March, 1955.

Owner: HOUSING AUTHORITY, City of Newark, N. J.
Architect: WM. E. LEHMAN, Newark, N. J.
Contractor: TERMINAL CONSTRUCTION CORP., Wood Bridge, N. J.
Ready Mix Concrete: J. P. CALLAGHAN CO., Harrison, N. J.

... WITH LEHIGH EARLY STRENGTH CEMENT

Careful planning, good management and Lehigh Early Strength Cement kept construction on Newark's First Ward Housing Project moving at a steady pace through the winter of 1954-1955.

The quick curing concrete, made with Lehigh Early Strength Cement, enabled Terminal Construction Corporation to strip column forms in 24 hours, beam and arch forms in 48 hours. Curing time was cut by two-thirds. *And within 2½ working days after a pour, all*

forms were in place on the floor above, ready for the mechanical trades.

Each day's pour—approximately 200 cubic yards—was completed before noon. With less bleeding and earlier hardening of the Early Strength concrete, finishers were off the job by 3:30 P.M. Overtime costs and unproductive overhead were cut to a minimum.

Remember Lehigh Early Strength Cement when planning winter concrete work. It will help you speed construction, cut costs.

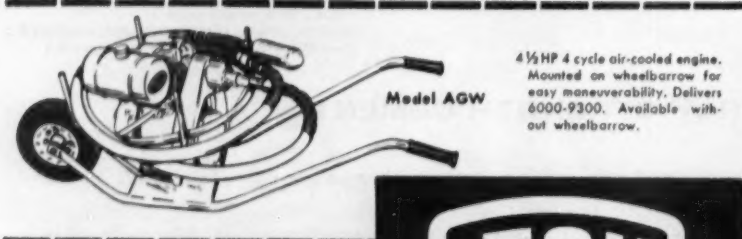
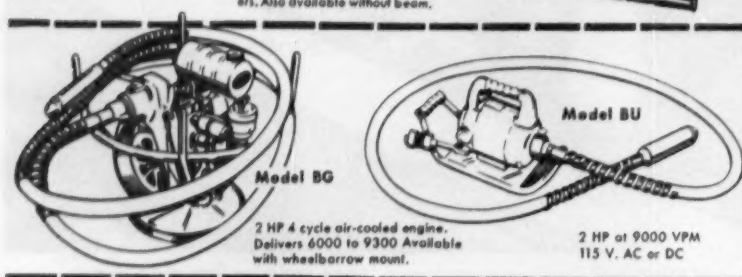
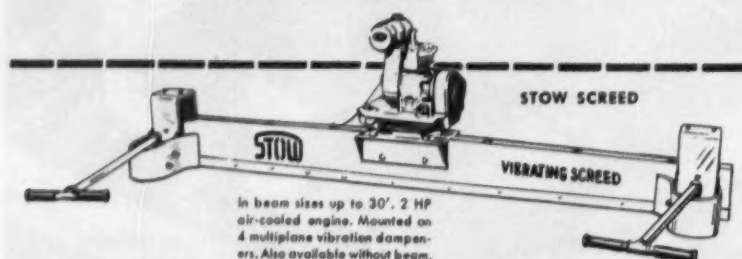


LEHIGH EARLY STRENGTH CEMENT
LEHIGH PORTLAND CEMENT
LEHIGH AIR-ENTRAINING CEMENTS
LEHIGH MORTAR CEMENT

LEHIGH

PORTLAND CEMENT CO. Allentown, Pa.

Concrete facts about Concrete Vibrators and Screeds



Here is the name you want!

STOW

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so attachments may be used directly on the vibrator shafts.

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around man-hole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Catalog 552.



STOW MANUFACTURING COMPANY

31 Shear Street Binghamton, New York

ELECTRIC TOOLS . . .

Continued from page 139

ports with gasoline, kerosene or a like solvent. Use a small brush to get solvent into corners. Blow parts dry with compressed air, if available, otherwise allow them to stand for a half-hour or so until dry.

2. Check commutator for scoring or heavy carbon streaks left by brushes. These can be removed by rubbing lightly with fine sandpaper—not emery cloth.

3. Replace armature and gears. Fill gear case about half full with grease, packing about gears. The manufacturers' instruction books will recommend the best lubricant for each tool. In the absence of the recommended lubricant, a high-grade, non-liquid SAE 30 grease may be used.

4. Reassemble and wipe clean.

More complex repairs and maintenance are usually beyond the capacity of any but a skilled repairman. Many distributors and most of the major tool manufacturers maintain service branches with factory-trained personnel. It is a good idea to send all electric tools to these shops for more thorough inspection after a number of periods of maintenance by contractor forces. Most of these shops maintain a stock of tools available for rental while your tool is being serviced.

A New Material

A new construction material, used as a surface coat for your concrete shop floor, can give it a resiliency roughly equal to that of a hardwood floor.

Developed by the Naugatuck Chemical Division of the United States Rubber Co., the new material—Latierete—is a combination of liquid rubber and a special cement powder. It is reputed to "give" without cracking under heavy loads, dampens shock and noise, resists the attack of alkalis and mild acids, sheds water and has good non-skid qualities.

The rubber-concrete has been used in test applications for repairing worn concrete floors, as a cushioning pad for heavy machinery, on floors subject to chemical attack, for non-skid ramps, waterproofing storage tanks, abating noise on hard-surfaced floors and eliminating dusting conditions.



Two Mack B42's . . . part of the sixteen-unit fleet of the Allen's Ready Mix Concrete Company, Memphis, Tenn.

Macks cut maintenance costs **90%**

Take it from Mr. S. G. Allen of the Allen's Ready Mix Concrete Co., Memphis, Tenn., when he says Macks really save him money.

Before he put Macks on his jobs, his monthly maintenance costs averaged more than \$1,000. Since switching to an all-Mack operation of sixteen mixers and dumpers, he finds these average monthly costs for his entire fleet have been cut to less than \$100!

As Mr. Allen puts it, "Macks have made an important contribution to the success of my business.

In my opinion, Macks are the finest equipment ever built. They have no equals for long life, dependable service, minimum down time and low-cost operation."

High praise for Mack performance? You bet! But ask other owners and operators of Macks throughout the country and see how they agree with Mr. Allen. It's no wonder that in the construction industry the "word" is—it pays to standardize on Macks.

MACK TRUCKS Empire State Building, New York 1, N. Y.

3357

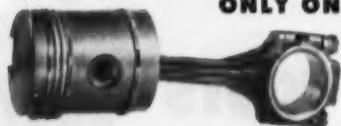
(Advertisement)

it's fun to be fooled at a **CIRCUS**

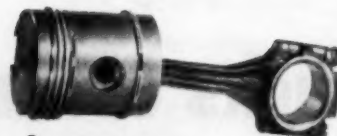


...but don't let anyone fool you with "Will-Fit" Replacement Parts!

ONLY ONE OF THESE IS GENUINE...



ONLY ONE IS GUARANTEED
TO DELIVER SERVICE!



There's no such thing as "or equal" replacement parts for Buda engines. Only Buda can produce and supply the exact replacement parts designed to keep Buda engines operating at maximum efficiency and profit to you.

Whether it's a piston . . . a set of rings . . . a gasket, gear or filter—whatever part you need—play it safe and sure by insisting on genuine factory engineered Buda replacement parts every time. It pays dividends in the long run.

BUDA DIVISION • HARVEY, ILLINOIS



Your nearby Buda Division Engine Distributor carries a large stock of genuine Buda replacement parts. Call on him for your requirements.



ALLIS-CHALMERS

BC-34



ROLL-TOGETHER BRIDGE DECK sits on wheeled dollies ready to be rolled into place at Long Island RR crossing over new

Meadowbrook Parkway at Carle Place, L. I. Ground conditions which prevented diverting railroad traffic led to this unusual method.



BRIDGE HALF, riding on wheeled dollies set on normal industrial rail, is pulled into place by cable attached to two-drum hoist powered by a Cummins diesel engine.

Bridge Halves Roll Together On Wheeled Dollies

CONSTRUCTING A BRIDGE under a railroad track without interrupting railroad traffic usually is done by building a temporary track and diverting traffic.

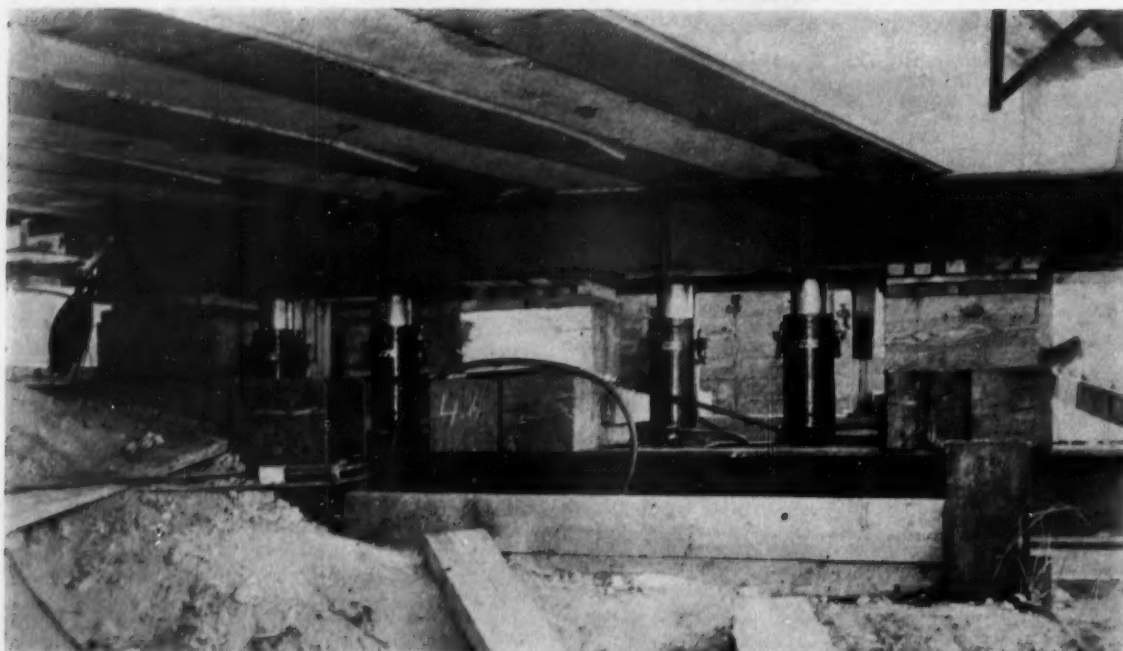
Because of ground conditions which made diversion impossible, Hendrickson Bros., Inc., of Valley Stream, N. Y., had to find a method of keeping Long Island R.R. traffic moving while the firm built a bridge over the new Meadowbrook Parkway at Carle Place, Long Island.

General Superintendent F. D. Sammis' solution was to build the bridge in halves parallel to the existing track and roll the sections together.

Simple—except for two, not so simple problems: (1) How to install concrete abutments and center piers under the existing tracks; (2) How to construct the new decks and roll them together.

By driving steel sheet piling and soldier beams and capping the latter with wide flange beams, Sammis was able to support the existing tracks. Then, by digging trenches under the supported tracks, two abutments and a center pier were concreted.

The problem of rolling the bridge halves together under the existing tracks was met with an assist from the Bethlehem Steel Co. Bethlehem supplied



BRIDGE IS SET ON PIERS by hydraulic jacks and roll-together is completed. New tracks and ties are laid and ready for traffic

6 hr later. Hendrickson Bros., Inc., of Valley Stream, N. Y., was general contractor. F. D. Sammis was superintendent.

Sammis with two sets of industrial rails which were placed in trenches previously dug, transverse to the existing tracks and extending on either side for 30 ft.

Wheel dollies were set on these, and timber bents laid up to the height of the new bridge. Structural steel then was erected and the concrete encasement placed for the new deck.

The actual rolling process started at midnight.

Track, ties and supporting stringer beams of the existing track were quickly removed. The bridge halves, supported by the dollies, were pulled into place by cables attached to a two-drum hoist powered by a Cummins diesel engine. Finally, the decks were lowered into position by hydraulic jack, and new tracks were laid. At 6 am the first train passed over the bridge.

Directly Behind the Screen

THOSE VERY NECESSARY sidewalk superintendents around on every construction job are getting gilt-edge treatment at the site of this department store and hotel project in Denver.

Explains T. J. Smith, project manager for Webb & Knapp, Inc., "Things were getting pretty congested on the sidewalk around the block square excavation with people peeking through the fence, so we put in bleacher seats. The seats hold 100 and in front we've erected a safety screen to protect the viewers. It's worked out fine. It keeps people away from the gate where the trucks come out, clears the sidewalks and is a good all-around safety angle. The bleachers are always pretty well filled up, too."





This site is the former home of 35' of water.

It moved out—lock, stock, and barrel—when a MORETRENCH WELLPOINT SYSTEM moved in!

Rapid Digging IN THE DRY Speeds Construction of Jersey City's Sewage Treatment Plant.

Garden State Constructors and Associates, Jersey City, contractors for this portion of the city's \$25,000,000 sewerage project, know how quickly water can sabotage the progress

of any job. That's why for quick, sure results in this mixed-up material (garbage fill, sand, silt and clay layers), they selected Moretrench to do the pumping.

When you have to deal with water, deal with Moretrench. Experienced engineers in any of our offices will be glad to analyze your problem, estimate on your requirements. The know-how of thirty years of pumping is at your disposal.

Send for Catalog

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New York 6

4900 S. Austin Ave.
Chicago 38, Illinois

7701 Interbay Blvd.
Tampa 9, Florida

315 W. 25th St.
Houston 8, Texas

Rockaway
New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario



23 MOVALLS ON SEAWAY. (As of Sept. 1.) Dutcher now has 12, Pitts Constr. 8, Atlas Constr. 3—total 23.

MOVALL'S POSITIVE EJECTION SCRAPES OUT GLUE-LIKE CLAY ON SEAWAY JOB

MORE LIKE GLUE THAN CLAY—that's how observers described the sticky, blue marine clay on Dutcher Construction Company's Grasse River Locks project near Massena, N. Y. Gravity alone couldn't discharge this sticky clay from bottom-dump and tilting end-dump wagons. It came out of scrapers in big lumps which blocked the scraper wheels.

After considering all types and makes of hauling units, Don Dutcher put nine C & D Movalls, powered by Caterpillar DW21's on the job. Here's what he says of his choice:

"I selected Movalls for my job on the St. Lawrence Seaway because I figured the positive ejection features would handle the sticky material here better than any other hauling unit. The MOVALLS will also handle rock and any other type of material

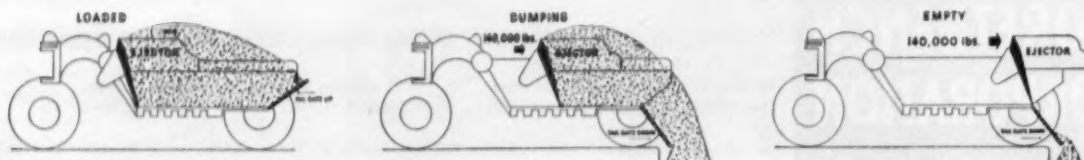
I'll have to haul. I like the easy interchangeability from Movall to scraper use. The Movalls are doing a wonderful job, and I am very happy with them."

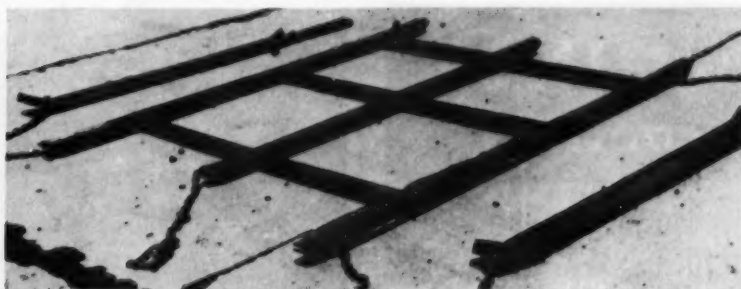
DOZER-LIKE EJECTOR with 140,000-lb. push wipes the Movall body clean every trip (no build up as with gravity dump); handles any material you can top load, enables you to control dump and spread, when needed.

BUY AND TRY FROM CATERPILLAR DISTRIBUTORS—C & D Movalls of 31 tons, 25 heaped yards capacity are available NOW for DW20's, DW21's; also 22 tons, 16 heaped yard Movalls for DW15's. Ask your reliable Caterpillar-C & D dealer to demonstrate on your job, or write direct to C & D Manufacturing Company, Perkins (suburb of Sacramento), California. Phone Hillcrest 5-8592.

6

HOW IT WORKS—Movall uses standard cable scraper power control. To dump, operator releases back-haul drum to drop tailgate, engages ejector drum. Eight-part ejector line gives 140,000 lb. push to boost load out fast and clean. Operator has complete control of discharge, controls spread depth by varying travel speed. After dumping, backhaul line closes tailgate and rolls ejector to loading position.





New Device Speeds ...



... Fabric-in-Asphalt Paving

A NEW TYPE hold-down device preventing welded wire fabric from entangling under a paving machine sped resurfacing of Detroit's Willow Run Airport.

Made in three steel sections, the device was fastened at both ends to permit the paver to move in any direction. Previous devices were simply dragged underneath and had to be detached for all major changes in movement.

The rig was also fitted with sled-type ends to prevent the fabric from catching to it. A center section consisted of a 3-in. I-beam

frame suspended between the tracks of the paver and extending from the front of the hopper to the conveyor screw. The two other pieces were 5-in. channels that rode just outside each track.

Another innovation made by the contractor, Howell Construction Co. of Howell, Mich., was the placing of fabric way ahead of the paver. Previously, sheets of fabric were laid only a short distance forward to prevent them from being damaged. But Howell placed an 1800-ft lane at one time, allowing the steel crew to do a more

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for **LUBER-FINER'S**

**ENGINEERED
PROTECTION**



YES! IT'S WHAT'S
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THAT COUNTS

The Efficiency of
Luber-finer's Exclusive
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**HAS NEVER
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Only a Luber-finer Unit
Plus a Genuine Luber-
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made Luber-finer The
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FOR EVERY TYPE OF ENGINE—
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First made available in 1941, the DIESELPACK was primarily designed for use with H.D. detergent compounded oils and has also achieved outstanding results when used with fuel oils and straight mineral oils.

**DON'T BE MISLED
BY PRICE ALONE!**

There is no substitute for DIESELPACK'S Patented Filtering Process for H.D. Compounded oils AT ANY PRICE!

The DIESELPACK cleans more oil faster — keeps it CLEAN longer — and gives more service and better engineered protection than ANY of the substitute filtering elements being offered for Luber-finer units.

IT PAYS TO GET THE BEST!

**STANDARD OF THE INDUSTRY
SINCE 1936**

Luber-finer Units are Standard and Optional Equipment on America's Leading Diesel Trucks, Tractors, Stationary Engines.

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K160
6.6 H.P.
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**A Quality Engine for
Quality Equipment**

Short Stroke

- Less Friction and Wear
- More Power
- Longer Life

Easy Starting

K90.....	2.5 to 3.6 H.P.
K160.....	3.6 to 6.6 H.P.
K330.....	7 to 11.8 H.P.
K660.....	12 to 26 H.P.

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Established 1873

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Helmar Hedman and Summerraire*

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BTU's PER HR.

... yet priced
20-30% lower than
smaller heaters

Clayton

SUMMERRAIRE PORTABLE, OIL FIRED SPACE HEATER

Helmar Hedman, like all contractors, makes money when jobs are finished on time . . . *weather or not*. Summerraire chases winter cold . . . dries out new construction; prevents freezing of concrete while curing; keeps workmen warm. Durable, portable, self contained; electric or gasoline engine drive, Summerraire delivers 2400 cu. ft. high velocity heated air per minute at amazing economy. 300,000 BTU capacity at a price 20-30% lower than that of smaller heaters.

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NEW DEVICE . . . Continued



HOG RING FASTENER with repeater-type dispenser ties 3x6 sheets of welded wire fabric together at lapped joint.

efficient job. Drivers were warned to keep off the lane. When a full lane was covered with fabric, it was tack-coated and paved.

Working one Barber-Greene paver and a 12-ton Galion roller, the contractor laid about 1,330 tons of bituminous concrete in a 12-hr day. The job required about 14,000 tons of material placed in a 2-in. binder course and a 1-in. surface course.

Reduces Cracking

The fabric-in-asphalt process was used primarily to reduce reflective cracking of the new surface, which was placed over a badly cracked un-reinforced concrete pavement.

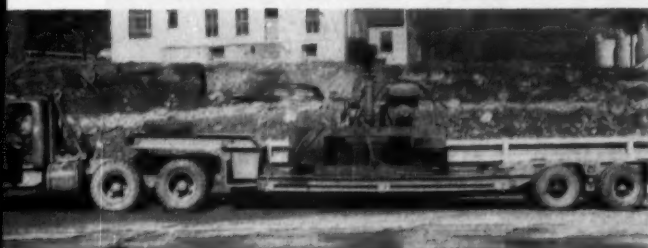
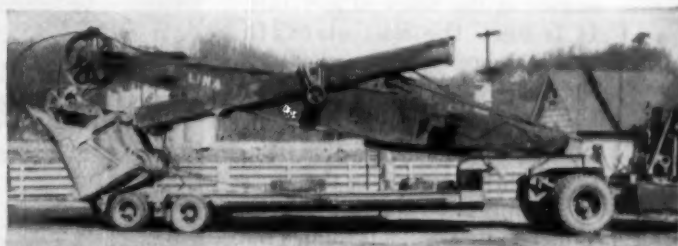
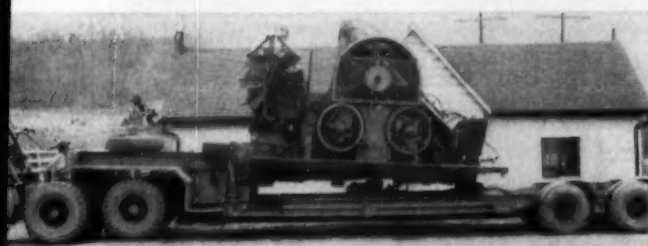
M. Durston was superintendent for Howell Construction Co.

Detroit's Willow Run Airport, one of the nation's busiest, became the first airport anywhere to use the fabric-in-asphalt process. The job involved the ½-mi center taxiway and the 3,500-ft west ramp. The original pavement, built in early World War II years by the Defense Plants Corp. as part of the immense Willow Run bomber plant, is 6 to 8 in. thick. It was un-reinforced, due to steel shortages. In certain areas, the 10x20-ft slabs were broken into smaller sections, with a good many corner cracks formed at points of heavy traffic. It required extensive maintenance. The new resurfacing is expected to reduce this cost by nearly 70 per cent.



**C. F. Replogle Co. reports:
"4 yd. LIMA 1601 knocked down,
trucked 125 miles and reassembled in 3 days"**

C. F. Replogle of C. F. Replogle Co., Circleville, Ohio, writes: "We really benefit from the fact that our new 4-yard Lima 1601 shovel knocks down for over-the-road transfer from job to job. We've knocked it down, moved it 125 miles and reassembled it in three days' time. During the eight months we've had it, the 1601 finished shovel work on three jobs and started a fourth."



"The Lima 1601's 400 hp diesel with torque converter 'toys' with a 4-yard rock bucket. It eliminates the necessity to 'clutch' the hoist, and multiplies hoist line pull under load to maintain hoist speed. Cable, gear and shaft breakage due to shock loads are eliminated. The machine consistently loads one E-18 Tournarocker (10 plus pay yards) per minute."

"The new 1601 even digs laminated rock that would usually require drilling and shooting. And its rugged construction cuts maintenance costs. To date, our 1601 has loaded out over 800,000 yards of rock without a single mechanical failure. We got all this for an original capital investment considerably less than we'd spend for other like capacity machines."

You can get all these benefits with the new Lima Type 1601! Send today for our new booklet containing detailed specifications. Write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio . . . or see your nearby Lima distributor.



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HOW TO BUY V-BELTS

FOR MORE POWER AND LONGER LIFE

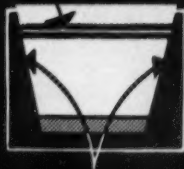
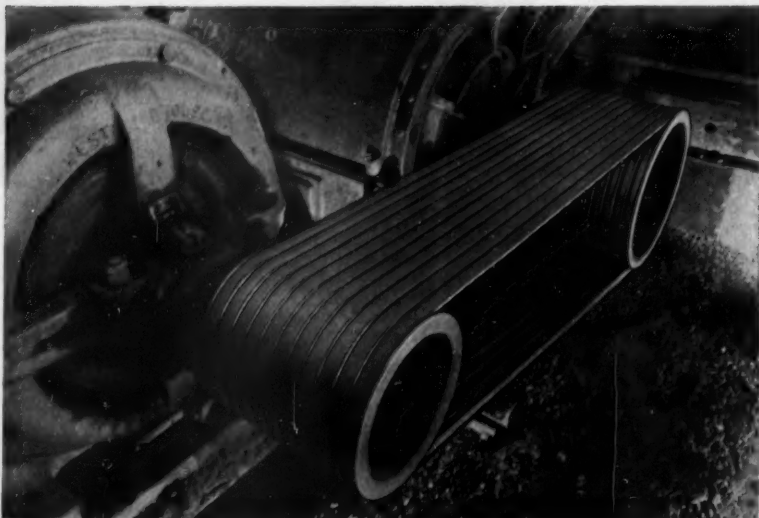
*...and get "More Use
per Dollar"*

Look for a belt with straight sidewalls and accurately positioned strength members that prevent sag in the "power line".

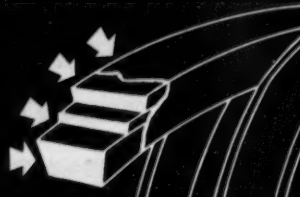
The "power line" or pulling section is the heart of a V-belt. It is here the belt strength members are located and it sets the load-carrying capacity of the drive.

Straight sidewall construction assures firm pressure in the lower or compression section of the V-belt so that when it rounds the pulley it supports the strength member in a straight line. All cords of the strength member should pull equally. If they "sag", as in some constructions, the outer cords are overworked and premature failure results. In addition, straight sidewalls exert a firm side-grip on the sheave grooves, eliminate slip and power waste.

Specify, by name, the V-belt most carefully manufactured so that every part is balanced to deliver full horsepower capacity and "More Use per Dollar" . . . specify R/M Super-Power or standard Condor V-Belts.



STRAIGHT SIDEWALLS
SUPPORT STRENGTH MEMBER



STRUCTURALLY BALANCED
FOR SMOOTH RUNNING

R/M SUPER-POWER AND CONDOR V-BELTS

For longer life under shock loads, R/M Super-Power V-Belts have a new synthetic super strength member which delivers up to 40% more horsepower capacity; fewer belts can be used on the same drive for the same horsepower. They are oil-proof, non-spark and heat resistant. Both R/M Super-Power and standard Condor

V-Belts have straight sidewalls with strength members micro-positioned and destretched during manufacture. This prevents power waste and frequent shutdown for belt take-up. Let an R/M representative show you why R/M Super-Power or Condor V-Belts last longer . . . give you "More Use per Dollar".

RM-811



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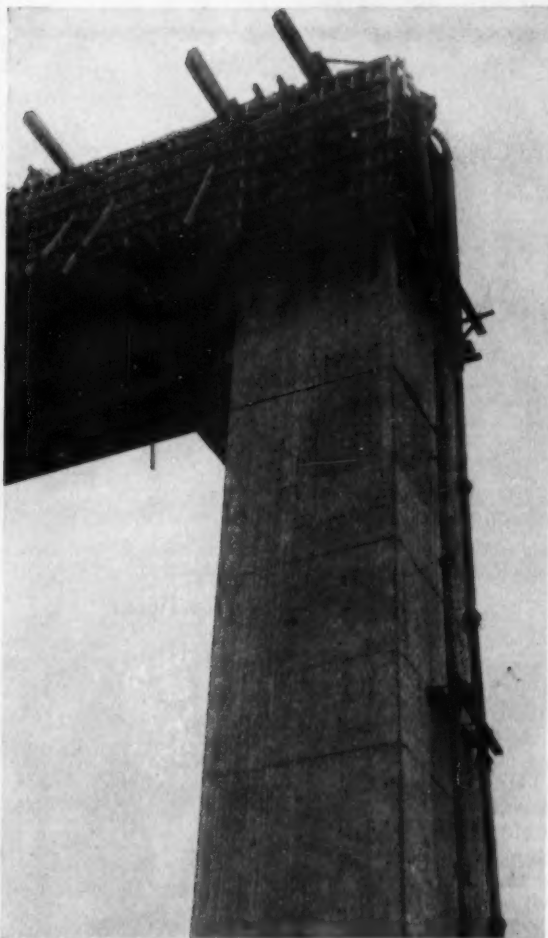


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Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
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SPANDREL BEAM on top of 100-ft high pier is poured with two 8-in. Pumpcrete lines. Supplying 50 yd per hr each, the lines start pouring at the ends and work toward the middle.

Bridge Pier Concrete Pumped 100 Ft High

FIVE HIGH PIERS for a new bridge across the Delaware River near Trenton, N. J. were poured entirely by Pumpcrete. Two 8-in. machines mounted on a floating plant pumped concrete more than 500 ft horizontally and 100 ft vertically to reach the tops of the big shafts.

Supplying 50 yd an hr, the two Pumpcreters poured two river piers and three adjacent land piers. Normally, the piers would have been poured by a crane and bucket. But Merritt-Chapman and Scott Corp., contractor on the \$3,700,000 project, had a floating Pumpcrete plant available at a downstream job that was nearing completion. To justify the cost of the big plant, project manager Harry Pagliaro decided to Pumpcrete everything he could reach.

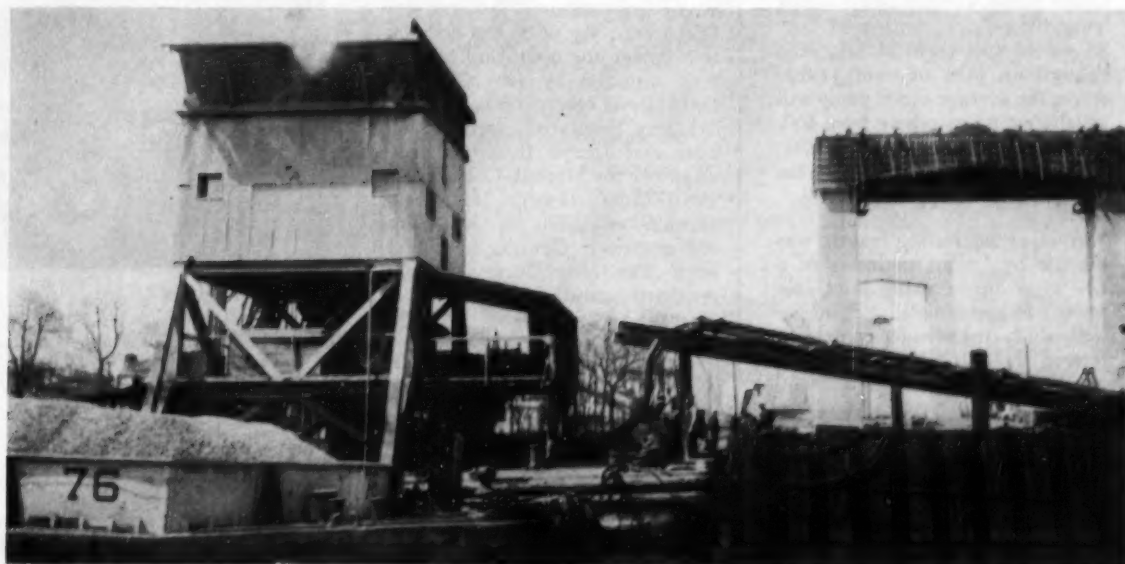
Tremie Pours

Lines were set up on barges to feed the river piers and on docks to feed the land piers. The plant shuttled back and forth to maintain the tight pouring schedule on the five piers. In the river, tremie pours of 1,600 cu yd were made in 16 hr. Pumpcrete lines were placed over planks supported on cofferdam bracing. They dumped into hoppers on top of tremie pipes.

Shafts of both land and river piers were poured in 55-ft lifts with only one Pumpcrete line. A lift required about 350 yd and was completed in 8 hr. Spandrel beams with about 630 yd of concrete were poured with two lines. They started pouring at opposite ends of the spandrel and worked toward the middle.

The Pumpcrete method involved some tricky pipe handling, but it kept the job on schedule and also made good use of an available piece of equipment.

(Continued on next page)



FLOATING CONCRETE PLANT mounting two 8-in. Pumpcrete machines places concrete in one of two river cofferdams on new Turnpike bridge. Next pour will complete spandrel beam on high pier in background. Contractor pumps nearly 500 ft horizontally.

HOW TO HANDLE WET JOBS

RELOCATION OF HOGAN'S CREEK

Jacksonville, Florida

Contr: Duval Eng'g & Cont'g Co.



LARGE VOLUME DRAINED AT VERY LOW FUEL COST

EXCAVATION ON this job was 15 ft deep (see photo) and ground water had to be lowered 10 ft in difficult soil (very fine sand with clay lenses.) How would you have estimated fuel requirements, figuring approximately 400 ft of header-line perimeter?

- Actually, one diesel-powered Griffin pump, working continuously 'round-the-clock, consumed only 35 gal of fuel each 24 hrs, even though on jobs of comparable scope, the average diesel pump will usually eat up anywhere from 40% to 80% more than this quantity. Thus the every-day savings to the contractor were appreciable.

- Another interesting feature was the use by Griffin engineers of a new type slip-on swing joint (see photo) to speed installation of the wellpoints. Any wonder contractor termed the job "100% success!"

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

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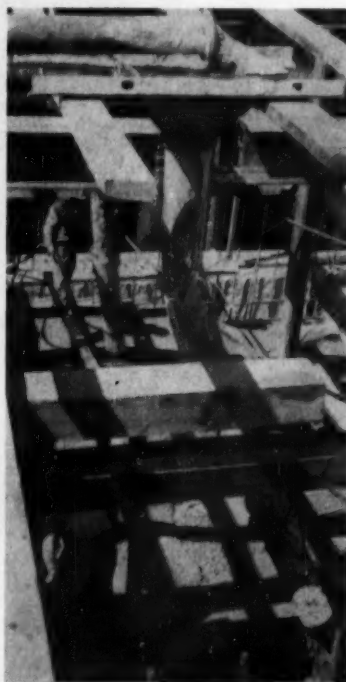


PUMPCRETE LINES supported on planks inside cofferdam carry mix to point of placement. Modern concrete plant is powered by Caterpillar D375 diesel-electric set.

Shaft forms consisted of $\frac{3}{8}$ -in. plywood backed by 3x6 vertical studs 16 in. apart. Horizontal walers were double 5-in. channels about 2 ft apart anchored with Richmond 1-in. Tyscrews.

The floating concrete plant was mounted on a 50x135-ft barge. It consisted of batching bins, a Koehring 2-yd mixer for each Pumpcrete, and a Wiley Whirley to charge the bins. Sand and stone scows were moored on each side of the plant, and a cement scow was tied to the stern. Cement was pumped to the bins with a Fuller-Kenyon unit. Water for the mix was pumped from the hold, which had a capacity of 30,000 gal. Electric power for operating the plant was supplied by two Caterpillar D375 diesel electric sets.

Harry Pagliaro is project manager and Joseph Rubin is project engineer for Merritt-Chapman and Scott Corp. George Nechwort is resident engineer for the consulting engineer, George S. Richardson. The New Jersey Turnpike Authority and the Pennsylvania Turnpike Commission are joint owners of the structure.



ELEPHANT TRUNKS suspended from hoppers distribute mix evenly over area. Concrete is built inside course of granite blocks.

Building Firm Is 115 Years Old

WILLIAM L. CROW CONSTRUCTION CO of New York has been in business 115 years this year. The company says that makes it the oldest building construction firm in

the United States.

The present president, William L. Crow, is the fourth eldest son in direct succession to head the company since it was founded.



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½-TON PANEL.....	\$18 to \$123
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¾-TON STAKE.....	\$39 to \$137
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1-TON STAKE.....	\$97 to \$188

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TRUCKS

WITH THE FORWARD LOOK



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Buckeye's new "O" series now includes 3 models, the 305, 307 and 308 — each one with new, exclusive features for smooth, clean, low-cost ditching — each one built to outperform any machine in its class!

Live Hydraulic Wheel Hoist!

For faster, more accurate positioning of digging wheel independent of all other functions. Easily operated from the seat by simple, one-hand controls. Lets operator work faster, more profitably!

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Forward or reverse in 3 speeds to meet any conveyor need . . . Eliminates shock damage found when driven mechanically from digging wheel drive . . . Completely controllable from the seat.

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Allow variation in tread width and bearing areas thru a selection of pads specifically suited to any type digging . . . Idler rollers have face-type seals for long life . . . Strong, sturdy and reliable!

See the New "O" Series

BUCKEYE

...at Your Distributor!

Product of



No. 55268

Negligent Spark-Plug Maintenance



Wrong heat range. This plug has burned electrodes with heavy coating of lead oxide on insulator. Remedy: Use colder plugs.



Lead Fouling. Can be identified by shiny yellow glazed surface or by small beads of lead on the insulator. Use cooler plugs.



Broken shell. Caused by too much torque when installing plugs in engine. Follow correct plug installation instructions.

A DISCUSSION of maintenance in the construction business usually results in thoughts of servicing large units—rebuilding transmissions, installation of new clutches, or beefing up the frame of a truck. However, small details such as proper maintenance of spark plugs can assume major proportions if not properly checked by a mechanic who knows what to look for.

Who would think that a small compact item such as a spark plug could mean as much as 10 to 20% saving in fuel costs alone? Add that saving to every gasoline-powered unit in your spread, and you'll quickly see how important it is to treat the spark plug with more respect.

A spark plug has no moving parts. Practically all of them look alike, but they may have one, two or three electrodes. All of them are inexpensive. Every spark plug, regardless of make or style, has the same job to do—ignite the gasoline and air mixture in the engine cylinder.

A properly maintained plug not only contributes to peak efficiency, reliability and economy in an engine, but also can do something else. If they have been properly installed, they will indicate other malfunctions in the engine when they are removed. Elsewhere with this article is a chart that shows some of the various troubles you can "read" from spark plugs.

Maintenance

Maintenance procedure for all spark plugs is the same. Before plugs are removed from the engines, blow out the spark-plug wells with compressed air to remove all foreign matter. It only takes a small bit of sand or dirt to ruin a highly polished cylinder wall. When the high-tension leads from the distributor are detached from the plugs, they should be inspected for cracks and other defects which can cause cross-firing or short out the current.

When taking out plugs, keep them in order of removal. This helps tracking down trouble in the engine. Examine the used spark plugs and their gaskets carefully.

If the gaskets are solidly compressed, too much torque was used in tightening. If the gaskets show no indication of being compressed, too little torque was used.

Too much torque will cause spark-plug threads to stretch. This might increase the spark gap of single electrode plugs, loosen the insulator in the shell, or pull the shell apart.

Too little torque will cause the plugs to run hot because of inability to transfer heat from the plug to the cylinder-head water jacket.

One manufacturer, Auburn Spark Plug Co., Auburn, N. Y., who makes triple-electrode spark plugs for construction equipment, furnishes a solid copper gasket. This gasket is non-compressible. It is claimed it positions the plug more accurately in the combustion chamber than does the compressible folded copper gasket on single-electrode plugs. It also conducts heat away from the combustion chamber efficiently.

How Tight?

No conclusions can be drawn by examining plugs unless they were properly tightened in the motor. Here are some hints on how much to tighten them:

With a folded copper gasket, using the correct socket wrench, the plug should be tightened $\frac{1}{2}$ to $\frac{3}{4}$ turn after the shoulder is firmly against the gasket. With a solid copper gasket, plugs should be tightened only $\frac{1}{8}$ of a turn after they are seated. In the few engines where no gasket is required, a torque wrench must be used to install the plugs, using only $\frac{1}{2}$ the torque recommended for plug installation with gaskets. Proper torquing values are given in an accompanying table.

Torque Guide for Plugs

Plug Size	Cast-Iron Head	Aluminum Head	Gasketless Head
10 mm	14 lb/ft	12 lb/ft	—
14 "	30 "	28 "	15 lb/ft
18 "	34 "	32 "	17 "
$\frac{7}{8}$ in.	37 "	35 "	—

Can Short-Circuit Your Operations

Helpful Steps

If the plugs were properly tightened in the engine head, proceed as follows:

1. Examine plugs carefully. Replace those that have cracked or broken insulators. Modern aluminum-oxide insulators will not break in service. A broken top is generally an indication of a direct blow.

Occasionally, the insulator nose may be broken when the plug is too hot for the engine. Internal stresses set up by expansion or corrosion of the center electrode may cause this damage. Bending the center electrode instead of the side electrode when setting the gap may also cause insulator nose breakage.

2. Check electrodes for excessive wear which shows that the plugs are too hot, and the next colder heat range should be installed.

3. Examine the electrodes and insulator tip. Properly selected spark plugs in a well-tuned engine will have clean, dry electrodes. If the electrodes have light-colored, shiny globules of metallic oxides

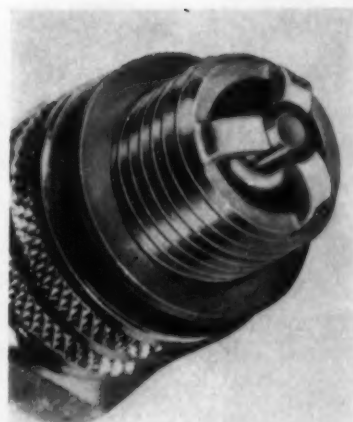
on them or on the firing end of the insulator, it is a sure bet the plugs are too hot. To correct this condition, install a colder plug.

A plug that is too cold for the engine will have either a dry, fluffy black carbon deposit over the firing end of the insulator or else a wet black carbon deposit.

A black fluffy deposit on the tip of the plug can also come from gasoline fouling: adjust the carburetor to a leaner mixture. Oil fouling, caused by sloppy pistons or badly worn rings, is indicated by a wet black carbon deposit over the firing end of the insulator. This motor condition cannot be cured by changing plugs, but it can be temporarily relieved by installing a hotter plug.

4. After the spark plugs have been thoroughly examined to learn the internal state of your engine, they should be cleaned in an abrasive cleaner. This cannot be accomplished in 4 or 5 sec. A minimum of 10 sec is necessary to remove all the oxides. Not all oxides and combustion products are visible to the naked eye—so take a little more

(Continued on page 161)



Spark plugs are now available with triple electrodes. This one has a solid copper gasket and gaps are pre-factory set.



Broken insulator tip. Caused by gapping tool straining the center electrode. Install new plug, carefully setting the gap.

MOTOR ILLS	Will Cause Fouled Plugs	Will Cause Pre-Ignition	Engine Will Not Idle	High Speed Miss	Hard Pull Miss
Gas Pump Diaphragm Leak		X	X	X	X
Broken Fan Belt		X			
Oil in the Gasoline	X				
Choke Stuck	X				
Poor Compression	X		X		X
Improper Timing	X	X	X	X	X
Hot Spot in Combustion Chamber		X			
Weak Coil	X		X	X	X
Weak Condenser	X			X	X
High-Tension Wires Defective	X			X	X
Defective Distributor Points			X		
Tappet Adjustment			X		
Clogged Cooling System		X			
Clogged Gasoline Line		X			
Too-Advanced Spark					X
Poor Fitting Pistons	X				
Worn Rings	X				
Improper Carburetor Adjustment	X	X		X	X
Carburetor Gasket Leakage			X		
Sticky Valve Stems			X	X	



Broken insulator top. Usually caused by careless installation. Use 6- or 12-point wrench of correct size when tightening.



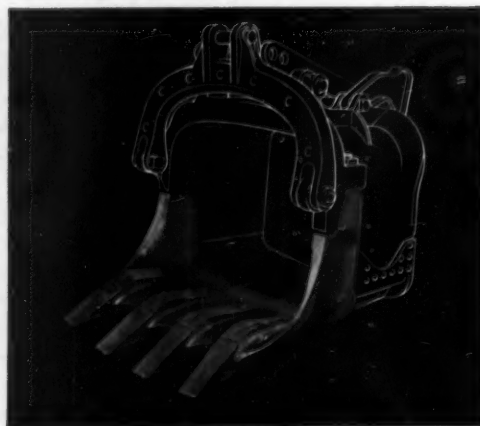
THIS AMSCO® LIP TAKES A SHARPER BITE

... chews out full loads at normal power

The lip juts way out where it easily bites up—and delivers—the full yardage of rock or earth. It's a sharp *extension* of the dipper, with fanned teeth—for fast, easy penetration. The dipper digs out a heavier load without strain on the shovel... even requires less power, and prolongs life of all parts.

This Amsco lip lasts a long, long time, because it's made of the toughest steel known—manganese steel—the metal that work-hardens to fight off wear by impact and abrasion. Lip replacement is simple, when necessary, keeping downtime short.

If getting more pay loads moved faster with less wear on equipment means more profits to you, specify *Amsco Renewable Lip Dippers*.



AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

SPARK-PLUG MAINTENANCE . . .

Continued from page 159

time with the abrasive blast. After the plug has been cleaned, blow off the abrasive material.

For single-electrode plugs, make sure the electrodes are filed and the gap measured from bare metal. Because electrodes of a single-electrode plug shield each other from the abrasive blast, this step is necessary if the plug is to be properly clean where it counts the most—at the gap.

Since the gaps of the triple-electrode plug are open, the abrasive can penetrate to all parts of the throat of the plug and the center electrode as well.

5. After they are cleaned, regap single-electrode plugs to the manufacturer's specifications using a regular gapping tool. Always bend the side electrode. The center electrode cannot be bent without breaking the insulator. Triple-electrode plugs are shipped with gaps factory-set, so adjusting is not necessary.

6. Insulators should be wiped clean with a cloth to remove any deposits left by the hands, and the high-tension leads attached. Check the engine operation and you're ready to roll.

Like the famous nail that lost the shoe that lost the knight that lost the battle that lost the kingdom, a spark plug is a little detail. But more attention to the four (or six, or eight) little details in every one of your gasoline engines will help eliminate more and bigger details.

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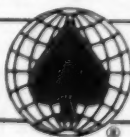
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CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

NLRB Sustains National Joint Board

A MAJOR THREAT to the whole machinery for settling jurisdictional disputes in the construction industry (CM&E June, p. 163) was eliminated by a recent decision of the National Labor Relations Board. The continued effectiveness of the National Joint Board for Settlement of Jurisdictional Disputes was at stake.

Local Refused To Comply

The case came before the NLRB after a lathers' union local refused to comply with a decision of the National Joint Board in which the work in dispute (an acoustical ceiling job) was awarded to carpenters. The contractor, A. W. Lee of Arlington, Va., filed the complaint with the NLRB after the lathers struck his job when he complied with the Joint Board's decision. Lee charged that the union violated the Taft-Hartley Act by encouraging its members to strike to force the contractor to assign the disputed work to them.

The NLRB took the same position it maintained in the only other similar case (in 1952) in which the authority of the Joint Board to render jurisdictional decisions was challenged (CM&E Feb., 1952, p. 61). It relied on Section 10(k) of the Taft-Hartley Act which says that the Board is "empowered and directed to hear and determine the dispute out of which such unfair labor practice shall have arisen unless, within 10 days after notice that such charge has been filed, the parties to such dispute submit to the Board satisfactory evidence that they have adjusted or agreed upon methods for the voluntary adjustment of the dispute . . ."

In its decision the Board said: "We find that before the charge herein was filed, the parties had agreed upon a method for the voluntary adjustment of the dispute here involved and that the dispute had been determined with-

in the framework of the agreed method. The fact that Lathers Local 9 has refused to abide by the determination in derogation of its agreement is, in our opinion, immaterial. As previously noted, the proviso of Section 10(k) applies equally to adjustment or an agreement upon a method of adjustment. The Board has previously held that the refusal of a party to abide by a determination made pursuant to an agreed-upon method does not nullify the agreement on a method for voluntary adjustment within the meaning of the proviso of Section 10(k). To hold otherwise would condone and sanction Lathers Local 9's breach of the agreement and would tend to discourage and render worthless the making of such agreements, contrary to the statutory purpose to encourage the voluntary adjustment of jurisdictional disputes."

Important To Contractors

The NLRB thus serves notice on both unions and contractors who have agreed to be bound by the agreement implementing the Joint Board that either or both cannot turn to the NLRB because they are in disagreement with a decision of the Joint Board. Refusal to comply with a Joint Board decision will not be sanctioned by the NLRB. By its decision, the NLRB has greatly strengthened the procedures set up for peaceable settlement of jurisdictional disputes in the construction industry. This decision is of great importance to contractors and to those unions that comply with the Joint Board's regulations and decisions.

Contractors should note one important point raised by the union at the hearing before the Trial Examiner. The union maintained that the contractor was not a party to the agreement setting up the Joint Board and had not taken steps necessary to come within the frame-

work of the Joint Board's jurisdiction, and therefore, the case could not be considered as within the provisions of Section 10(k). On this point the Board found that the contractor had not signed the stipulation that would make him legally bound by Joint Board procedures and decisions. However, he had in fact become bound by the agreement and the Board's processes because he had replied to requests for information, had requested the Joint Board to reconsider its original decision of December 1, 1954, and had asked the Joint Board to intervene when the lathers struck.

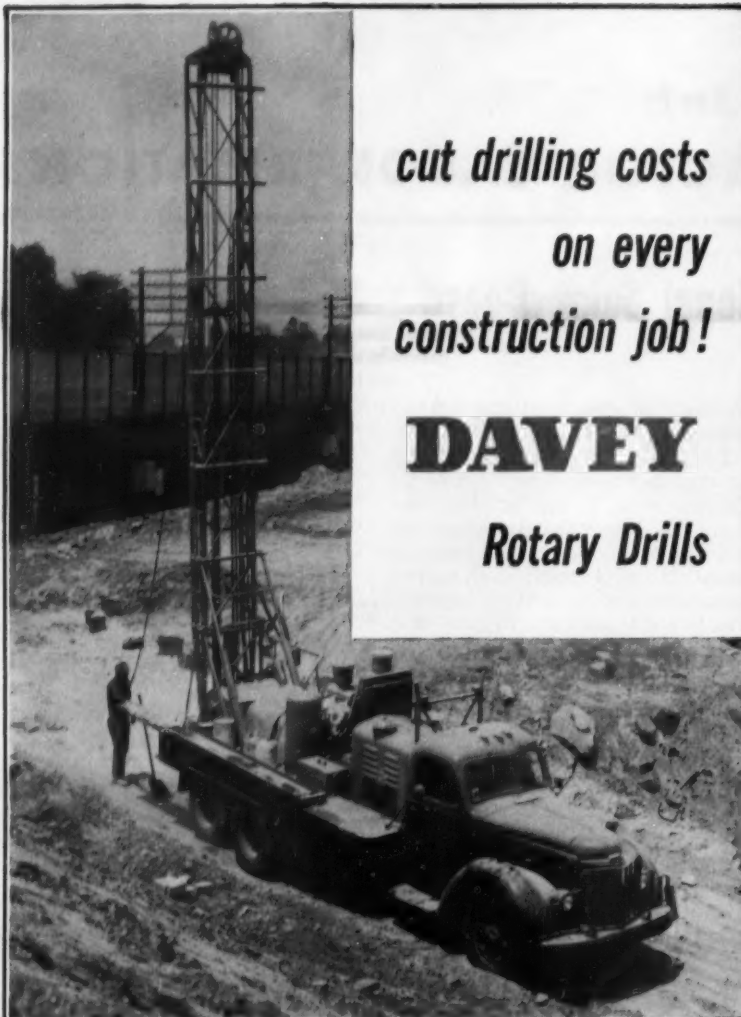
Contractors should avoid any question arising over their adherence to Joint Board procedures. The agreement setting up the Joint Board provides that contractors, or an association acting for its members and with power to bind them, should sign a stipulation that they are willing to be bound by the terms of the agreement and will abide by Joint Board decisions. You can obtain the form for the stipulation by writing to the National Joint Board, 901 Massachusetts Avenue, Washington, D. C.

NLRB Rules on "Hot Cargo" Clauses

How many building trades labor contracts contain a clause reading something like this: "Employees shall not be required to work on non-union materials?" In a recent case the NLRB, by a 3 to 2 majority, ruled that such clauses are not enforceable when the union seeks to enforce them by inducing employees to refuse to handle or work on such materials.

The case arose when the Los Angeles carpenters' union instructed the carpenter foreman on a project to order the men not to install doors because they did not bear the label of the United Brotherhood. The foreman did as ordered, and the company furnishing the doors filed the complaint, charging a secondary boycott.

Chairman Farmer and Board



Davey M-8A Rotary Drill operated by Ralph Toy under contract to Western Construction Co. on Ohio Turnpike near Hudson, Ohio.

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LABOR . . . Continued

Member Leedom in their decision took the position that an employer may voluntarily agree to boycott the materials of another employer by signing a contract containing a "hot cargo" clause. But the union, party to such a contract, violates the secondary boycott provisions of the Act when it induces the employees of the contractor to refuse to handle the goods of another employer. They said: "Such conduct constitutes inducement or encouragement of employees to engage in a concerted refusal to handle goods for an object proscribed by Section 8(b)(4)(D) no less than it does in the absence of such agreement."

A Separate Opinion

Board Member Rodgers, while agreeing with his two colleagues as to the violation, went further in his separate opinion, saying: "In my view of the facts of the instant case, the 'hot cargo' contract, as a subterfuge for avoiding the proscriptions of the Act and as an effort at advance immunization against unfair labor practice findings, is patently unenforceable."

As they have in the past, Board Members Murdock and Peterson dissented, saying the agreement was lawful and the decision of Chairman Farmer and Member Leedom encouraged employers to violate their agreements with labor organizations.

Thus, just prior to the retirement of Chairman Farmer from the Board, its position on this important issue was that hot cargo clauses are 1) legal when included in labor contracts, 2) enforceable when the employer voluntarily or at the union's request directs his employees not to handle non-union made materials, 3) not enforceable when the union directs the employees not to handle the goods.

But now that Farmer is no longer on the Board, it is split 2-2 on this issue. It will be necessary to wait the appointment of a new chairman and another similar case before any conclusions can be reached on this important type of labor dispute. In the meantime, it will be well for contractors to refuse to include such clauses.



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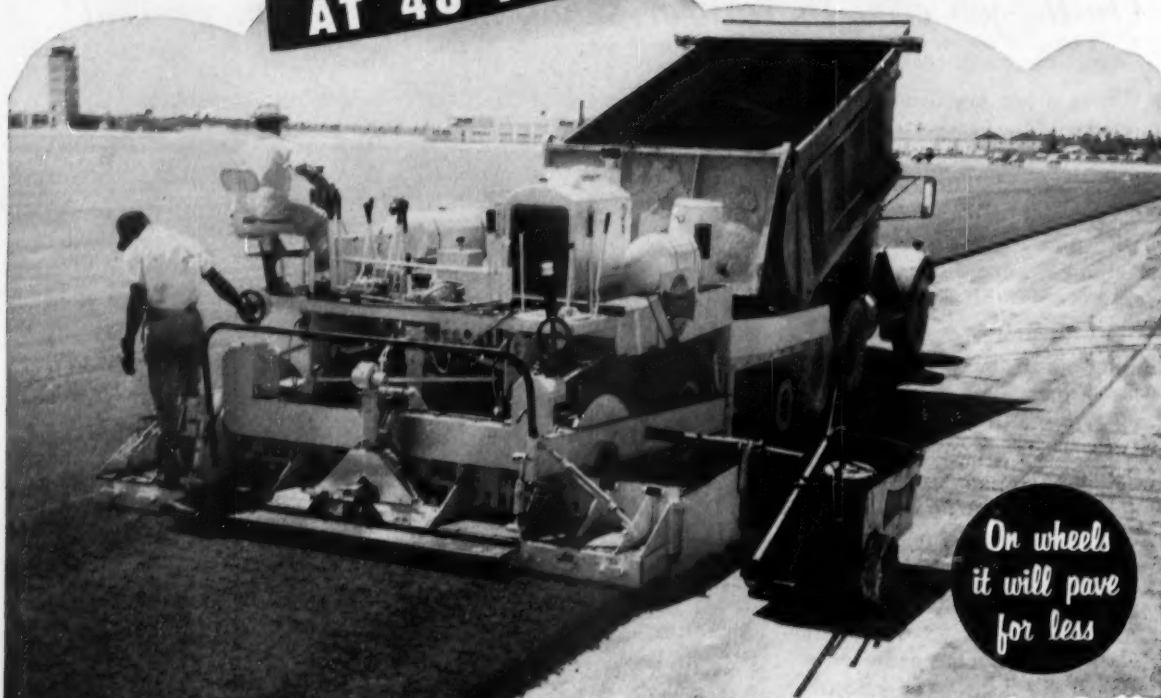
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SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Harnischfeger Corp.: H. C. Ormes Construction & Equipment Corp. has been named distributor for the complete line of P&H power cranes and shovels for southern Minnesota. Ormes will sell and service P&H models ranging from the Miti-Mite truck crane to the 2½-yd power shovel.

Clark Equipment Co.: Avery Tractor Inc. has been appointed distributor of the Michigan line of tractor shovels and excavator cranes produced by the Equipment Machinery Div. of Clark. Avery will handle Michigan products in Vermont from a newly established office at Montpelier.

Cummins Engine Co.: C. F. Irons is president of newly formed Cummins Diesel of Northern Ohio, Inc., recently appointed distributor for northeastern Ohio. Headquarters for the new distributorship is Cleveland, and branches are maintained at New Philadelphia and Akron, Ohio. A service branch is planned for Youngstown, Ohio.

R. G. LeTourneau, Inc.: W. E. Richardson Machine Co., Inc., Birmingham, Ala., has been named distributor of LeTourneau electric hoists and job cranes for the Alabama area. Russell Keller is president.

On the Sales Front

International-Harvester Co.: Three transfers and a promotion of truck field sales representatives in the Midwest and East were announced recently by the motor-truck division. Barr Crawford, district manager at Pittsburgh, is now St. Louis district manager; H. A. Herman, district manager at Fort Wayne, becomes Pittsburgh district manager; M. J. Gowen, district manager at Richmond, Va., moves to the same position at Fort Wayne, and R. W. Maxwell, assistant district manager at Richmond, becomes district manager at that post.

LeTourneau-Westinghouse Co.: Jack McCann, who has been serving as manager of the Washington, D. C., office, has been appointed Government sales manager, and Jack Erion, former advertising promotion supervisor, has been named sales

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SALES AND SERVICE . . .

Continued

promotion manager. Other LeTourneau appointments include two men formerly with the J. D. Adams Co., Indianapolis, Ind. E. L. Cline has been named central sales manager and John Herrick has been appointed western service manager.

Nelson Stud Welding Div., Gregory Industries: Charles H. Carrick has been named product manager for the Remington Stud Driver in the sales department of Nelson. For the last 2 yr he has handled Remington sales in the Ohio-Western Pennsylvania territory.

Marion Power Shovel Co.: As part of a major expansion in parts and service facilities in Canada, Marion has announced the appointment of R. Ralph Helm, Jr., as its eastern Canada sales manager. As such, he will be in charge of sales of all Marion machines from the Province of Manitoba east to Nova Scotia and will work with distributors in that area.

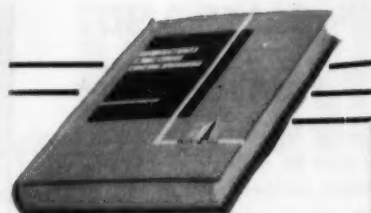
Atlas Equipment Corp.: William R. McCloskey, a veteran of 25 yr in the construction equipment business, has been added to the sales department of Atlas. His experience includes 10 yr with Stone & Webster on construction projects and 8 yr of materials-handling sales engineering work.

Flexible Road Joint Machine Co.: William V. Gilronan was recently named sales manager of Flexible Road Joint Machine Co., an associate of Heltzel Steel Form & Iron Co., Warren, Ohio. He will direct sales of the Flex-Plane line of road equipment, including portable concrete finishing machines, automatic spray curing machines, mechanized dowel and tie-bar installers and joint installing machines.

Garrett Corp.: The AiResearch Industrial Div., Los Angeles, Calif., manufacturer of turbochargers for diesel engines, has appointed Robert B. Butler as sales manager. A veteran of 20 yr with the Oliver Corp., he is experienced in sales development, research and engineering in the diesel field.

L. B. Foster Co.: Erskine Fraser, formerly an engineer for R. F. Burton Co. and a bridge superintendent with W. J. Tidwell Co., has been appointed to the Atlanta office sales staff. He will handle sales of steel sheet piling, pipe piling, steel pipe and rail and track accessories in the southeastern states.

Iowa Manufacturing Co.: Four new salesmen will represent the Cedar-rapids line of aggregate producing
(Continued on page 171)



ESTIMATING CONSTRUCTION COSTS

Here are the practical considerations you need to know to make accurate estimates on engineering projects—the understandable methods and helpful data you need for realistic, sound estimating. Each major type of construction is covered in detail not only on materials, labor, and equipment, but on overhead and profit as well. Over 100 time-saving tables help you make speedy, accurate estimates. By R. L. Peurifoy, Professor of Civil Engineering, A&M College of Texas. 350 pp., 60 illus., \$8.00

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NEW POWER is provided by the modern, 105-hp Allis-Chalmers diesel. Tornado Turbulence and "follow-through" combustion mean cleaner burning and more power from fuel, as well as smoother engine performance and extra long engine life. Added power pays off in extra crowding and digging ability, fast work cycles.

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SALES AND SERVICE . . . Continued

and bituminous mixing equipment in territories ranging from New England to Salt Lake City. Harry M. Ford will handle Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, and the Metropolitan New York area. C. E. Lutz will work in Ohio, Indiana, Kentucky, Western Pennsylvania and West Virginia. R. C. Gregor's territory includes Utah, Wyoming, Montana, Colorado, and Alberta and Saskatchewan, Canada. K. F. Hamilton has been appointed to the domestic sales department.

Timken Roller Bearing Co.: E. H. Hughes, manager of the sales order department, has been named to the newly created post of assistant to the sales director. At the same time, J. L. Brown was named assistant manager of the sales order department, and Donald M. Brown becomes manager of the allocations department.

In the Main Office

Clark Equipment Co.: Bert Walter, previously in charge of industrial and personnel relations at Bendix Aviation Corp., has been named to the same post by Clark. He will have charge of industrial and labor relations, personnel offices, training and education, safety programs, community relations and all other related matters.

Construction Machinery Sales Co.: The Waterloo, Iowa, firm has appointed Anthony Loveall vice-president and general manager. For the last 2 yr Loveall has been in the field force of Construction Machinery Co.

Le Roi Div., Westinghouse Air Brake Co.: H. J. Buttner has been appointed manager of engineering, according to an announcement made by Paul I. Birchard, vice-president and general manager. Buttner has had 25 yr of engineering experience in the design and development of high output internal combustion engines.

Gardner-Denver Co.: Gifford V. Leece, president, has been elected chairman of the executive committee to succeed Ralph G. Gardner, who recently retired as treasurer and head of the executive committee. Mr. Gardner continues as chairman of the board of directors. Alexander G. Lindquist, vice-president and formerly secretary and comptroller, has been named treasurer and a member of the executive committee. At the same time, Charles M. George, assistant to the president, was elected secretary and William H. Miller was named assistant treasurer.

Hyster Co.: Arvel A. Mann, since 1953 a factory engineer and chief



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It would have cost me



pennies less, but it

cost Joe dollars more



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—300 project news items a day: on **PROPOSED WORK** (averaging over \$100 million a day); on **BIDS ASKED, LOW BIDDERS AND CONTRACTS AWARDED** (averaging over \$70 million a day). These name owners, engineers, architects, give job descriptions, dates, locations, estimated costs

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SALES AND SERVICE . . . Continued

inspector, has been named factory manager at the Peoria, Ill. plant. Mann was previously a staff engineer for Caterpillar.

Galion Iron Works & Mfg. Co.: William R. Troyer is the new supervisor of sales and service training for Galion. CM&E, in its August issue, erroneously reported that William R. Troper had been named to that post.

Special Mention

Clark Equipment Co.: Will establish a West Coast plant before the end of the year, it was disclosed recently. The West Coast facilities will be used as a parts depot at the outset and later will be expanded as an assembly plant for fork-lift trucks. It will be located in the San Francisco Bay area, where several properties are being investigated.

Garlinghouse Bros.: Garlinghouse, Fremont & Co., a new corporation recently purchased the retail sales division of Garlinghouse Bros., who will now devote their entire activity to the development and manufacture of Gar-Bro products. Garlinghouse, Fremont & Co. will represent in southern California all the nationally known heavy construction equipment manufacturers previously handled by Garlinghouse Bros. The new firm is headed by John L. Fremont, formerly vice-president and general manager of State Equipment Co., Albany, N. Y.

American Hoist & Derrick Co.: The managements of American Steel Dredge Co., Inc., and American Hoist & Derrick Co. have reached agreement in principle on a reorganization under which American Hoist & Derrick Co. will take over ownership and operation of the business and facilities of American Steel Dredge Co., Inc. Under the plan, subject to a favorable Federal tax ruling and to approval by stockholders and the boards of directors, stockholders of American Steel Dredge Co., Inc., will become stockholders of the parent company.

Associations

National Lime Assn.: Conrad M. Kelley, recently in charge of the Dallas district laboratory of the Texas Highway Dept., has been employed by the National Lime Association to provide technical information to highway engineers on lime stabilization of road bases and subbases. This is a step in the association's program to promote the use of lime and lime-fly ash stabilized bases, which have been used on over 1,000 mi of highway in the last 10 yr.

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cut maintenance time to the bone!

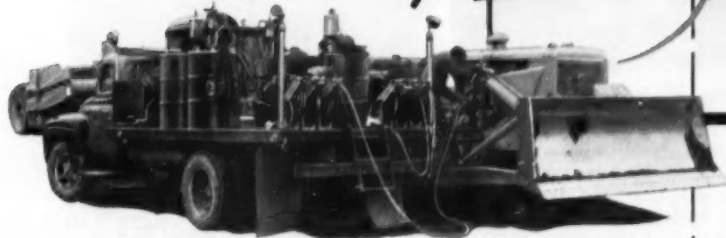
Alemite Portable Service Stations take all the advantages of power lubrication right to machines on the job — no time spent in travel to and from a grease shop — cut maintenance and downtime to the bone. Even more important, they assure the protection only power lubrication can give, greatly reduce the chances of costly bearing failure.

And you get all this tailored to your exact lubrication needs — all from standard Alemite equipment. Nothing is specially built. An Alemite Portable Service Station soon pays its own way by proven savings in time, money, equipment!

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...and your Alemite
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you money!**



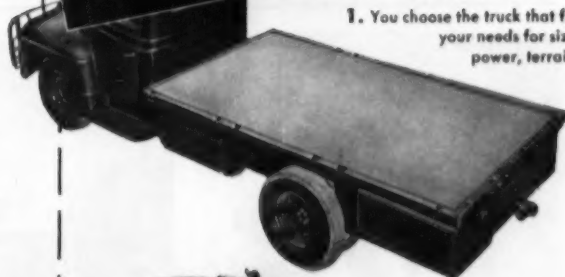
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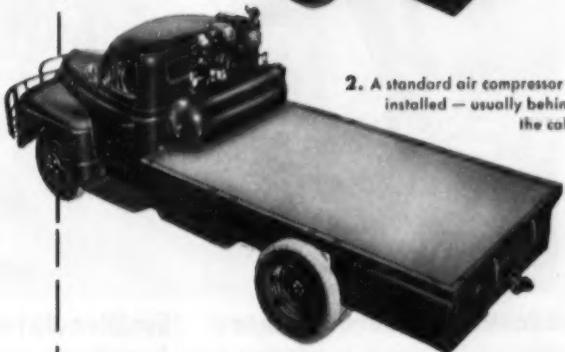


**Here's how
it works...**

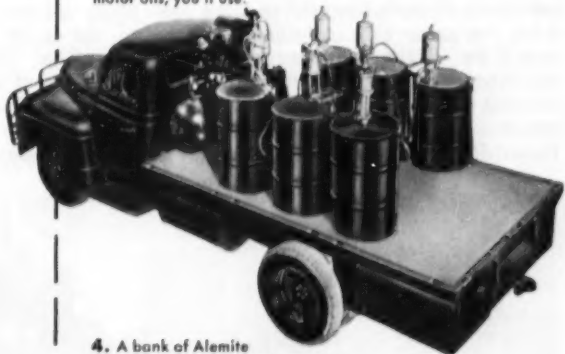
1. You choose the truck that fits your needs for size, power, terrain.



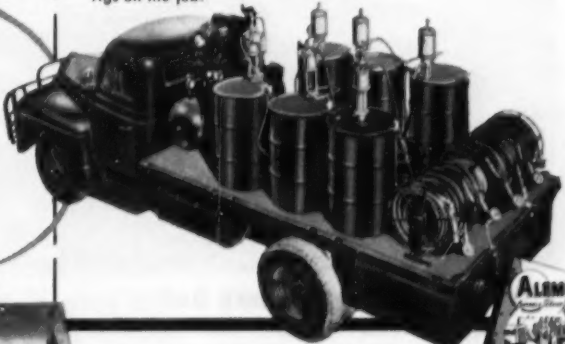
2. A standard air compressor is installed — usually behind the cab.



3. Alemite Barrel Pumps are added to handle pressure gun and gear lubricants, motor oils, you'll use.



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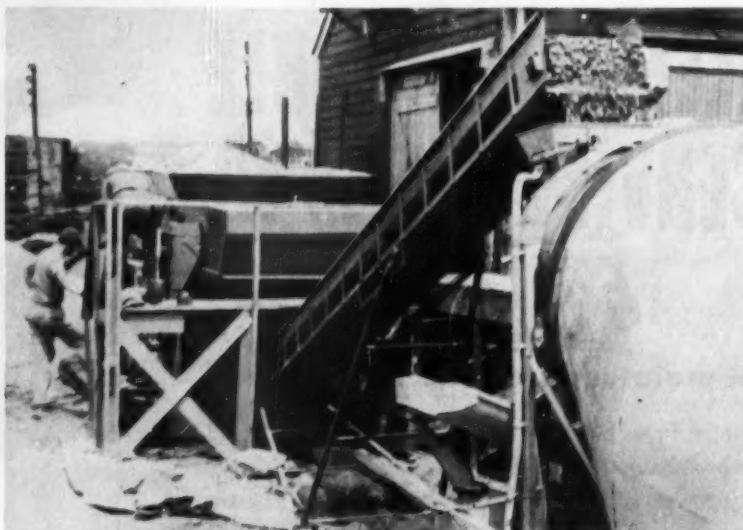


CONSTRUCTION EQUIPMENT NEWS



Excavator From Germany

Because its chassis is powered by the excavator engine, the $\frac{3}{4}$ -yd Demag B406 can be driven to the job site at 40 mph, then put to work from the same cab. Another feature is its weight reduction resulting from careful balance that reduces counterweight requirements. — **Demag - Baggerfabrik, Dusseldorf, Germany.**



Smaller Batching Bin Is Nearer Job

A smaller-than-usual batching bin can be easily set up in outlying areas to cut down the haul route of truck mixers serving jobs located far from bigger batching plants. The Conveyex batching bin is equipped with either two or three compartments that are supplied by a front-end loader. It batches each aggregate separately

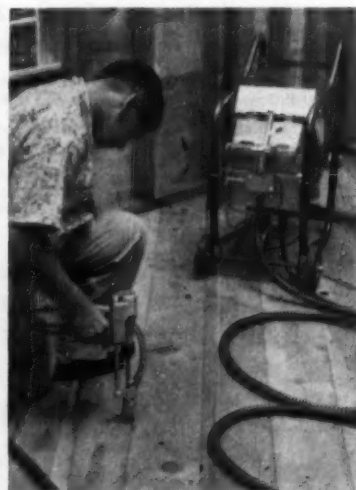
on to a troughing belt conveyor connected to the truck. Its scale is the decumulative type that comes back into balance as the indicated amount is discharged from each compartment. The Conveyex can handle bag cement, but it is more efficient when bulk cement is employed. — **Construction Machinery Sales Co., Waterloo, Iowa.**



Razor-Sharp Teeth Churn Soil

The Scari-Plow's 23-in. disk blades, each with 10 razor-sharp notches, leave borrow pits loose and finely broken with no large chunks to clog scraper aprons. When used before binding layers of soil, the churning action of the notched blades eliminates the danger of lamination, prepares the soil

so that it packs better since air pockets are eliminated. Because its low draft line assures equal blade penetration, the Scari-Plow performs well at mixing water into layers of soil at highway projects. Equal blade penetration also assures even wear. — **Towner Manufacturing Co., Santa Ana, Calif.**



Air-Powered Nailer

An automatic nailer, supplied by an air-powered, wheel-mounted feeder, drives 30 nails per min to flush, countersunk or extended. Largest of three guns weighs 7 lb 1 oz, handles 6d to 16d nails. It is operated with one hand. — **Matrix Engineering Corp., 3016 E. Lake St., Minneapolis, Minn.**

On-the-Job Previews of Machinery, Tools and Equipment



Tubeless Tires Available for Earth Movers

Two 34-yd Woolridge scrapers working along the Ohio River have been equipped with the first tubeless earthmover tires ever made, and Goodyear is now in production with various sizes. The tires on the Woolridge scrapers are mounted on specially designed multi-piece rims. The tires offer increased flotation because when they are sealed with three rubber rings, lower air pressures are practical. Larger sizes weigh around 2,000 lb each, cost approximately \$5,000.—Goodyear Tire & Rubber Co., Akron, Ohio.



16-yd Movall Wagon Works With DW15

A new Movall Wagon, designed for the Caterpillar DW15 tractor, has a heaped capacity of 16 yd, carries 22 tons. A smaller model of the "scraper in reverse" 25-yd Movall, it features the same cable-controlled ejection out the rear. Other features include a 27-ft turning radius, 10 x 16-ft loading target, and 11 sec. dumping time. Low center of gravity allows dumping at any speed. Standard Caterpillar cable controls permits quick changeovers with scraper units.—C & D Manufacturing Co., Perkins, Calif.



Interchangeable Barrels

The Model 455 Stud Driver features easily interchangeable barrels with varying impacts to meet different job requirements. It fastens 25 types of $\frac{1}{4}$ -in. studs from 1 to 3 $\frac{1}{4}$ in. long, or 12 types from 1 $\frac{1}{2}$ to 4 $\frac{1}{4}$ in. Adjusts for one- or two-handed operation. — Remington Arms Co., Inc., Bridgeport, Conn.



Earthripper Operates Like a Chain Saw

A row of borium-faced teeth spaced 6 in. apart around a continuous bucket line enables the Earthripper to cut through soil in much the same manner as a chain saw cuts through timber. The shaving action of the teeth, which cut only $\frac{1}{4}$ to $\frac{1}{2}$ in. at a time from the bank, permits the Earthripper

to cut hard formations without difficulty. At the other extreme, the soil is reduced to small easily loaded particles when cutting in gumbo or clay. The unit employs a power takeoff from the truck on which it is mounted. Available in three sizes. — Rocky Mountain Export Co., Box 1051, Denver, Colo.

The Most Versatile Equipment You Could Own

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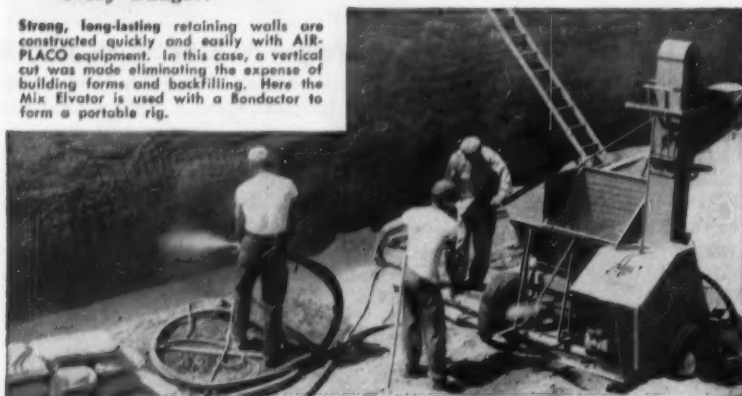
**BONDACTOR
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You'll be amazed at the many ways you can use AIRPLACO Concrete Gunning Equipment! With a Bondactor or Nucretor, you can efficiently gun concrete, refractory linings, insulating concretes and all types of gunnable aggregates plus wet or dry sandblasting.

You'll be amazed, too, when you discover the many ways in which you can save valuable time and money with AIRPLACO equipment. After a few hours of instruction, from one of our field men, your operators will be efficiently using the equipment and discovering new uses and methods of saving money for you.

AIRPLACO Bondactors and Nucretors are available in a range of sizes from $\frac{1}{2}$ to 6 cu. yd. of aggregate per hour capacity. A model and size for every job . . . for every budget!

Strong, long-lasting retaining walls are constructed quickly and easily with AIR-PLACO equipment. In this case, a vertical cut was made eliminating the expense of building forms and backfilling. Here the Mix Elevator is used with a Bondactor to form a portable rig.



WRITE TODAY for complete information including the many uses for AIRPLACO equipment and the name of your nearby distributor. Please state intended use and capacity requirements.

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You can't beat MILLER Tilt-Top's fast, easy loading. ONE man can drive on or off the tilted platform in less than two minutes . . . without the bother of any special skids, cribbing or jacks. This easier, faster loading cuts time between jobs, adds more productive, profit time every day. Whatever you haul, dozers, trenchers, rollers or other heavy equipment, there's a MILLER Tilt-Top to handle them easier, faster and safer!

Model "B" 10 ton \$1175*
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EQUIPMENT NEWS . . . Continued



BOTTOM-DUMP—A new hydraulically operated bottom-dump motor wagon, called the TW-360, is powered by a 280-hp Allis-Chalmers diesel engine providing, at 2100 rpm, forward speeds ranging from 3 mph in 1st, to 20 mph in 4th gear. Reverse speed is 3.1 mph. The motor wagon, with a 22-ft. wheel base, has a 22-yd heaped or 17-yd struck capacity. Its over-all length is 35 ft 10 $\frac{1}{2}$ in.; width is 11 ft 3 $\frac{3}{4}$ in. and height is 10 ft 1 $\frac{1}{2}$ in. When loaded it has a 22 $\frac{1}{2}$ -in. front-axle clearance. The door opening in the 6 $\frac{1}{4}$ -ft deep wagon is 5 ft 8 in.x11 $\frac{1}{2}$ ft. The unit weighs 47,000 lb. Features of the TW-360 include two-speed hydraulic steering, 24-v electrical system, four-wheel air brakes, and one-level control to operate doors that retract along the sides of the body for greater ground clearance and wider door opening. — Allis - Chalmers Manufacturing Co., Tractor Group, Milwaukee, Wis.



BIN AND BATCHER—A new Simplex bin and batcher is available in 47 and 97 ton capacity with two, three and four compartments with or without separate cement storage. The following advantages are featured: only a few pieces to assemble when erecting, including interchangeable legs; radial aggregate discharge gates; dual rubber pinch cement charging gates; combination clam and rubber pinch discharge gate.—Construction Machinery Sales Co., Waterloo, Iowa.

HERE'S BIG-CAPACITY DIGGING ABILITY YOU CAN MOVE FROM JOB TO JOB



BUCYRUS-ERIE 180-W WALKING DRAGLINE

The 180-W swings a 5-yd. medium-duty bucket on a 120-ft boom. Other boom and bucket combinations are available.

ON levee work, dam construction, contract stripping — any big job — you are ahead with the economical, high-capacity dirt-moving offered by a Bucyrus-Erie walking dragline. In the 180-W you have it — along with unmatched ease in moving from job to job.

The 180-W is readily dismantled for shipping. No main machinery components are disturbed. You never need worry about misalignment problems. The complete machine is easily loaded on five U. S. railroad cars, and is easily reassembled. This ease of moving saves you

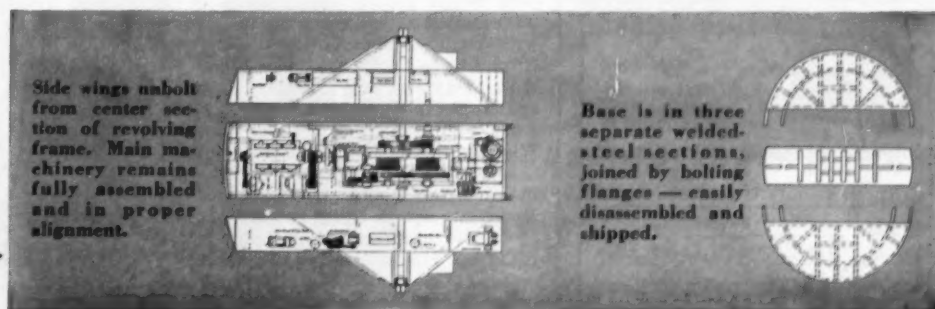
time and expense and greatly increases the 180-W's value throughout its life.

Besides its unusual portability, the 180-W brings to more jobs the dependable, big-output performance, quick maneuverability, long working range, and low maintenance costs common to all Bucyrus-Erie walking draglines. Send for complete information. 50155

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Side wings unbolt from center section of revolving frame. Main machinery remains fully assembled and in proper alignment.

Base is in three separate welded-steel sections, joined by bolting flanges — easily disassembled and shipped.

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**in Electric or
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IT'S A ONE MAN OPERATION**

Drill any kind of masonry, including hardest concrete.

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FOUR-WHEEL DRIVE—International's new R-120 light-duty truck has a minimum body and step height that makes it practical for off-the-road operations with four-wheel drive or for normal road conditions with conventional drive. The truck has a gross weight of 7,000 lb, and is offered in four wheelbases between 115 and 134 in. The R-120 is powered with a 108-hp Silver Diamond 220 or 131-hp Silver Diamond 240. According to the manufacturer, a fully-loaded model climbed a 56 deg grade easily in tests. Tire sizes range from 6.50x16 through 9.00x16 when added flotation is desired. A selection of pickup and stake bodies is available.—**International Harvester Co., Chicago, Ill.**



NEW MACK MODELS—The gas engine B-60X and the diesel-powered B-61X are designed to handle 10- or 11-ft dump bodies with a struck capacity of up to 8 yd. Both the B-60X, powered with a 185-hp Thermodyne EN-464A gas engine, and the B-61X, equipped with a 170-hp Thermodyne END-673 diesel engine, have a 158-in. wheelbase and a gross vehicle weight of 46,000 lb. A choice of standard five-speed shifting, or Mack's nine-speed Duplex overgeared transmission is offered on either model. To withstand the rigors of dump-truck work, the cab and the front-end sheet metal assembly form a single independent structure that is held from the frame by rubber supports. This makes it immune to frame flexures when traveling over rough ground. Rear axles on both models are dual-reduction type, with radius rods and torque arms. Brakes have a total area of 710 sq in., with 17 1/4x6-in. rear drums. Standard tires are 11.00-24, 14-ply, single front and dual rear on 8.5 rims. Whenever possible, quickly removable panels are utilized to facilitate maintenance in the new models. Instruments are located on an easily accessible pull-out panel, and all fuses are grouped in a panel in the glove compartment.—**Mack Trucks, Inc., 350 Fifth Ave., New York, N.Y.**

**LAYKOLD
Weathercoat**



**—a "permanent
poncho"
for exposed
insulation**

If you have "hot" or "cold" tanks, towers, vessels or piping exposed to the weather, you know the problem. Insulation must be kept dry to be effective. Weathercoat is the answer.

**High-efficiency
insulation insurance**

Laykold Weathercoat is the best "raincoat" your units could have because it seals out not only water but also water vapor. In addition, Weathercoat stays "alive" through season after season.

Write for full details.

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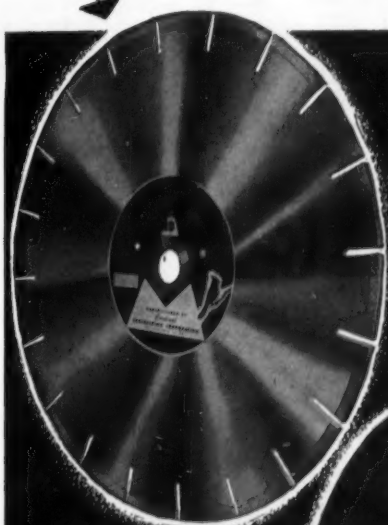
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WORLD'S LARGEST CONCRETE ROAD CUTTING JOB PROVES SUPERIORITY OF *CARDINAL BLADES*!

1,000,000 feet of West Virginia turnpike cut in record time—at lowest cost in history!



In cooperative effort with William F. Middlestadt of Seals, Inc., of Baltimore, who furnished equipment and personnel, **CARDINAL NON-BRAK BLADES** cut a 68 mile x 1½ inch longitudinal joint in this new two lane highway, and a 24 foot transverse joint every 18 feet . . . total—1,000,000 lineal feet through limestone aggregate. Job completed with **CARDINAL NON-BRAK BLADES** in record time at a record low cost.

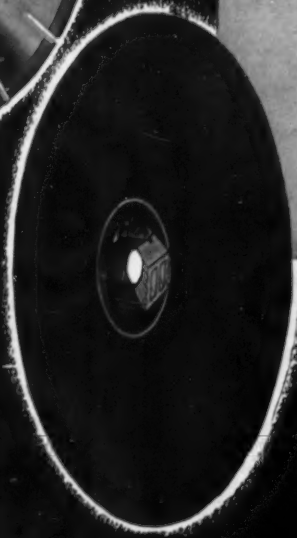


Cardinal **NON-BRAK BLADES**

Lowest initial cost on the market—reinforced with steel and fiberglass for better cut and longer life.

Cardinal **DIAMOND BLADES**

33 1/3% more cut-ability than conventional blades—25% lower initial cost.



When you work with **CARDINAL**, you work with blade men who know the concrete cutting business . . . men who will frankly tell you when a rugged, low-cost **CARDINAL NON-BRAK BLADE** will do the job on green concrete, at less cost than a diamond blade . . . or, when a **CARDINAL DIAMOND BLADE** will give you the best deal, cost-wise, on aged concrete or other hard specifications. More footage per day . . . less cost per cut—that's the kind of guarantee that makes good sense. Call, write or wire, today!

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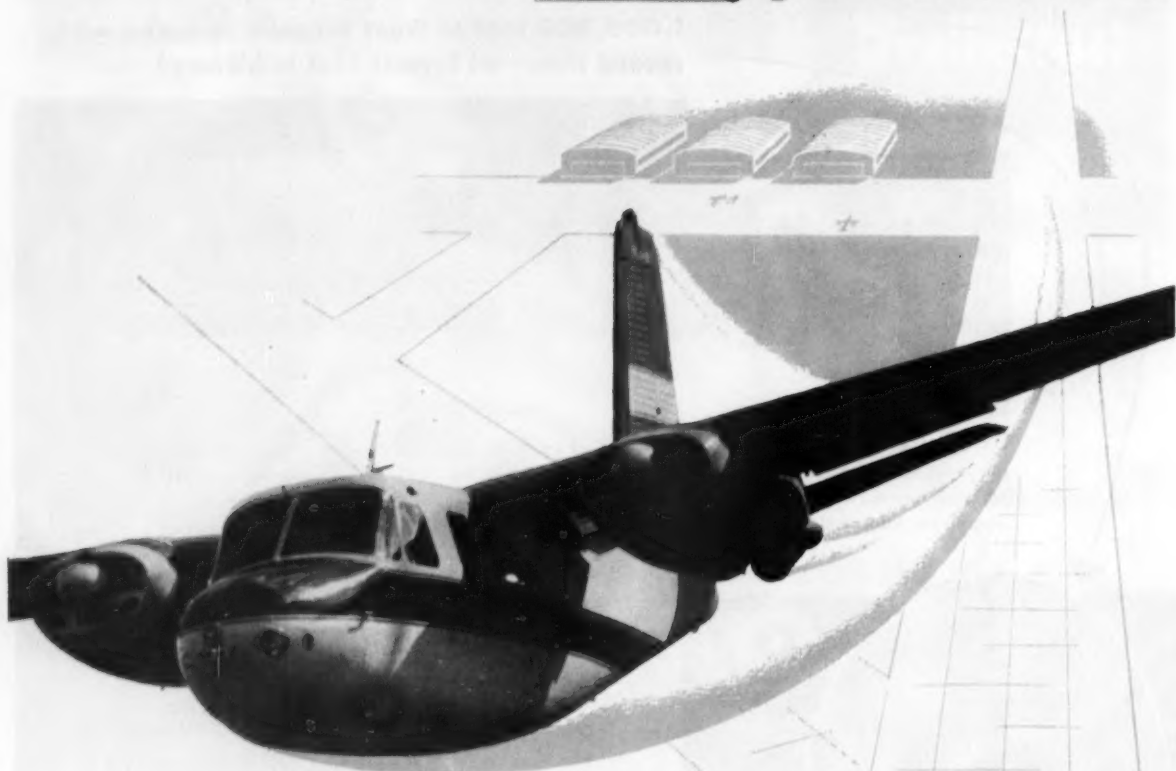
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Branches or Distributors in Most Principal Cities

now *Supercharged* performance



MORE SPEED—230 m.p.h. @ 70% power (260 m.p.h. maximum). **MORE RANGE**—1400 miles normal range (1600 miles maximum). **MORE LOAD**—7,000 lbs. gross (2750 lbs. usable). These are but three of the outstanding features in the new supercharged

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C-680-Super

For complete information see your nearest Aero Commander distributor or write for Catalog 133-S

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MASONRY DRILL—Core-Vent carbide-tipped masonry drills' distinctive milled slots for ejection of chips, replacing conventional spiral flutes are said to eliminate packing and binding, with less heat generated. Two of the inserted carbide teeth undercut clearance so that the core is easily removed in one solid piece, free of binding and stall-

ing. Removable shanks in sizes from ½- to 6-in. dia permit extension drilling of deep holes. Drill sizes are available from ¼- to 6-in. hole sizes. —Super Tool Co., 21650 Hoover Rd., Detroit, Mich.

TRUCK SEAT—The new Bostrum seat uses torsional rubber springs to protect drivers from bad jolts. Two rubber torsion cylinders are fastened to the front end of the frame. When a bump is encountered, spring arms and rotating shafts transmit the shock to the thick rubber cylinders with a twisting motion. The rubber springs absorb the brunt of the shock, and the seat remains virtually level. Tension on the springs can be adjusted for drivers weighing from 100 to 275 lb. Obtainable for most of GMC's 1955 Blue Chip trucks. —Truck & Coach Div., General Motors Corp., 660 South Blvd., E., Pontiac 11, Mich.



FRONT-END LOADER—The Napco NL-50 front-end loader features a 7-ft 4-in. turning radius to the outside of the bucket. The short turning radius and a low center of gravity give the loader high maneuverability in tight spots. The loader, with a lift capacity of 1,250 lb, has a 35-deg bucket tilt-back angle from ground level. Other features include a maximum lift of 7 ft 6 in. under the bucket hinge, no-clutch shifting with planetary-type transmission, and a "floating arm" that lets the bucket follow floor contours in clean-up work. —Napco Construction Equipment, Napco Industries, Inc., 834 N. 7th St., Minneapolis, Minn.

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This Sure Sign
of Quality and
SAFETY!



"INFERNO"® Pile Driver

RED COVER **STEAM HOSE** BLACK STRIPE

To avoid any doubt about the *safety* of steam hose for pile-driving, "Inferno" can now be easily identified by a black spiral stripe on the familiar red cover. There can be no mistaking an *unsafe* hose for the one with an unequalled reputation for strength, durability and safety in severest pile-driving service. Because it is built the Goodall way, you can rely on "Inferno" to stay on the job *longer*, without risk of bursting and consequent danger to men and damage to equipment.

"INFERNO" STEAM HOSE specifications include high-temperature tube; multiple-layer, braided steel wire carcass; red wear-and weather-resistant synplastic cover. Sizes ½" to 3", inclusive, in maximum lengths of 50 feet.

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WARN Automatic HUBS MAKE 2 TRUCKS OUT OF 1

Road or no road, Warn Automatics give your 4-wheel drive sensational new economy, driving ease and mobility. Your 4 W. D. is automatically a "free-wheeling" 2-wheel drive, or 4-wheel drive AS YOU SHIFT! Use it as a town car, "pick-up" or work horse in and out of mud, sand; on and off the highway. It "free-wheels" or "4-wheels" to suit conditions AS YOU SHIFT! What's more, you can drive at high speed in 4-wheel drive on any terrain! Automatic (and Locking) models for all makes of 4 W. Ds. from 1/2 to 1 1/2 tons. Ask your authorized factory truck dealer for a FREE DEMONSTRATION of amazing Warn Hubs, or write:

WARN MANUFACTURING CO., Riverton Box 6064 CM10, Seattle 88, Wash.

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DRIVE!

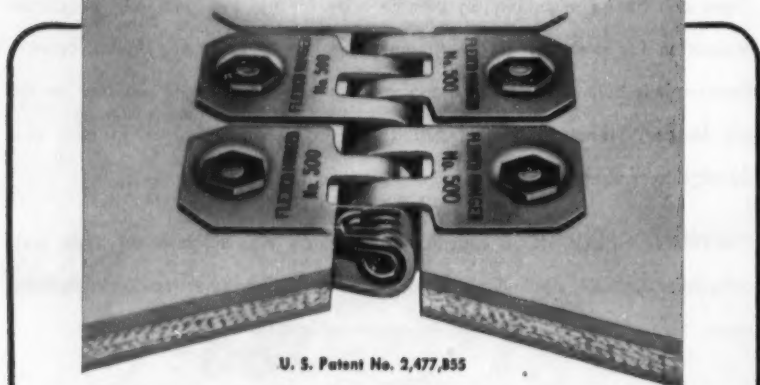


WARN
Automatic
HUBS



COMPACT EARTH TAMPER—A portable earth tamper that is small enough to transport in the trunk of a car delivers 2,500 impacts of 1,500 lb while traveling 60 to 75 fpm. The self-propelled vibrating machine, called the Jay Trampler, does not require air compressors, lines or hoses. Powered by a 2 1/2-hp Wisconsin air cooled engine, it will operate 8 hr on 2 gal of gas. Interchangeable 12-, 18- and 24-in. tamping shoes are available. A shock absorber, mounted between the handle and tamping chassis, combines with sponge rubber handle grips to minimize vibration travel to the operator.—Jay Corporation, Columbus, Ohio.

... the new separable FLEXCO HINGED BELT FASTENERS

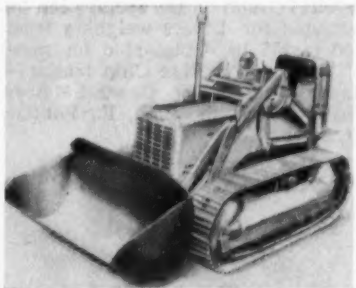


U. S. Patent No. 2,477,855

- ✓ For joining grader, trencher, ditcher and other earth moving conveyor belts.
- ✓ For belts 3/8" to 1/2" thick.
- ✓ A FLEXCO fastener that is HINGED. Has removable hinge pin.
- ✓ Troughs naturally, operates through take-up pulleys.
- ✓ Strong, durable... pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

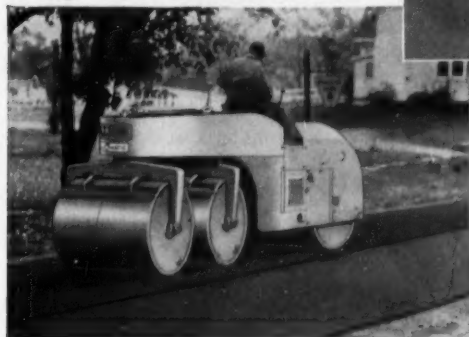
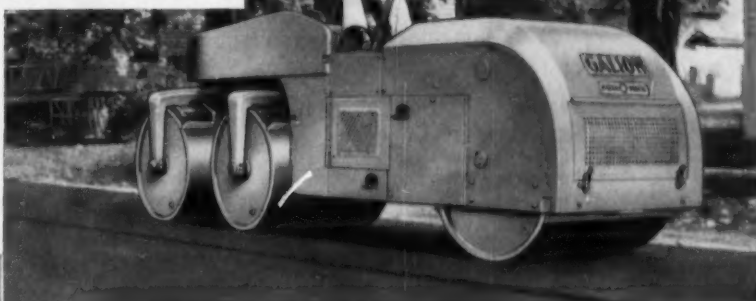
FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.



CAT'S TRACTOR-SHOVEL—Good operator visibility and the ability to tilt the bucket 40 deg at any position are features of the new, 1 1/2-yd No. 955 Traxcavator. The tilt-back characteristics of the new tractor-shovel are said to reduce cycle time in stockpile loading, control the depth of cut in stripping operations, and improve stability because the center of gravity of the loaded bucket moves toward the tractor as the bucket is tilted back. The seat location of the No. 955 is 9 1/2 in. higher and 11 1/2 in. forward of the HT4, Caterpillar's first tractor-shovel. Two reverse speeds up to 264 fpm and four forward speeds up to 607 fpm are available. The 70 hp Traxcavator is 15 ft, 1 1/4 in. long, 80 in. wide and 82 1/4 in. high. Ground clearance is 13 1/4 in. and total weight is 21,480 lb.—Caterpillar Tractor Co., Peoria, Ill.

Most Effective Compaction With Fewest Passes

A 3-axle tandem roller, with a variable weight range from 14 tons (metal weight) to 20 tons fully ballasted with water, is now being built by GALION. In addition to the main compression or drive roll, it has twin guide rolls with synchronized hydraulic steering. You get up to 50% smoother finish rolling than with conventional tan-



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dem, and up to 60% greater tonnage of material can be compacted per day. You get faster and better compaction of joints and seams. Elimination of cross-rolling saves you time and money.

TRANSFER OF WEIGHT PRINCIPLE

With the three rolls of the GALION 3-axle tandem roller operating on a plane, an effective transfer of weight occurs whenever one of the rolls hits a high spot in the surface being rolled. When this takes place, only two of the rolls are in contact with the surface. Therefore, the weight of the third roll transfers to the other two, thus bringing more compaction weight to bear on the high spot. This feature accounts for the extremely high compaction efficiency of the Galion 3-axle tandem roller.

GALION gives you the most effective and economical driving power obtainable. The ROLL-O-MATIC Torque Converter (GM-Allison) Drive differs from a fluid coupling drive. A fluid coupling transmission requires a manual gear shift mechanism, and the fluid coupling itself never multiplies engine power.

The Galion ROLL-O-MATIC Torque Converter Drive has no gear shift mechanism. Furthermore, it automatically MULTIPLIES the engine driving force by means of oil in motion instead of by transmission gears. It automatically APPLIES the driving force as the work demands. When the Governor Lever is moved to a selected rolling speed, the engine power will be applied and regulated AUTOMATICALLY — up hill, on the level, down hill, and around curves. Reversing action is velvet-smooth; shock loads are eliminated.

MORE EFFECTIVE COMPACTION WITH BETTER FINISHING



On level surfaces all rolls compact and finish.



With drive roll on high spot, weight of center guide roll transfers to other two rolls.



With center guide roll on high spot, all weight of end guide roll and part of compression roll weight transfers to center guide roll.



With rear guide roll on high spot, weight of center roll transfers to other two rolls.

EYE-OPENING RESULTS

The Galion ROLL-O-MATIC Torque Converter Drive saves up to 25% in fuel, engine life is increased 35% and life of forward-reverse clutches 40-50%. Elimination of master clutch, gear shifting, and shock loads results in unequalled ease of operation. Rolling speeds from .8 to 5.5 m.p.h. are available.

For complete information, fill in and return the coupon.

<p>Please send me literature on the Galion Rollers checked.</p> <p><input type="checkbox"/> 3-AXLE TANDEM</p> <p><input type="checkbox"/> 2-AXLE TANDEM</p> <p><input type="checkbox"/> THREE-WHEEL</p> <p><input type="checkbox"/> PORTABLE</p> <p><input type="checkbox"/> TRENCH</p>	<p>THE GALION IRON WORKS & MFG. CO., Dept. CM-105, Galion, Ohio, U.S.A.</p> <p>PERSON _____</p> <p>FIRM _____</p> <p>STREET _____</p> <p>CITY _____ STATE _____</p>
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The world's most powerful tractor —with Torqmatic Drive

TWIN POWER TRAINS—made possible by Allison TORQMATIC DRIVES—make Euclid's new TC-12 the world's most powerful crawler sold today.

This twin-engine giant gets 388 horsepower from two GM Diesels—uses a pair of TORQMATIC Converter-Transmission teams to turn that power into more than 100,000 pounds draw-bar pull and provide a smooth, steady

flow of power for all job requirements.

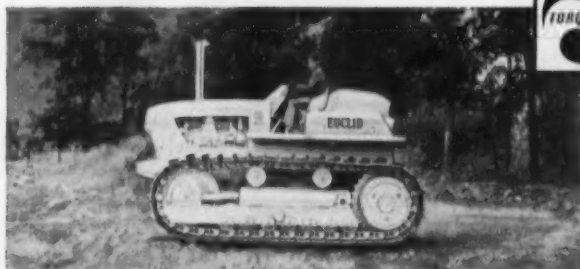
But for all its power the TC-12 is easy to run for it has no master clutch.

The driver changes speeds with finger-tip hydraulic control at full power, instantly shifts from forward to reverse, spins his tractor in its own length, maneuvers with no more than a twist of the wrist.

And he gets more work done per day

because with a top speed of 730 feet a minute the TC-12 doesn't crawl—it really moves fast.

You can build or buy a better product by specifying TORQMATIC DRIVES for your hard-working gasoline- or Diesel-powered equipment. Ask your equipment dealer or manufacturer for more information or write direct to Allison Division of General Motors, Box 894T, Indianapolis 6, Indiana.



Allison
TORQMATIC DRIVES

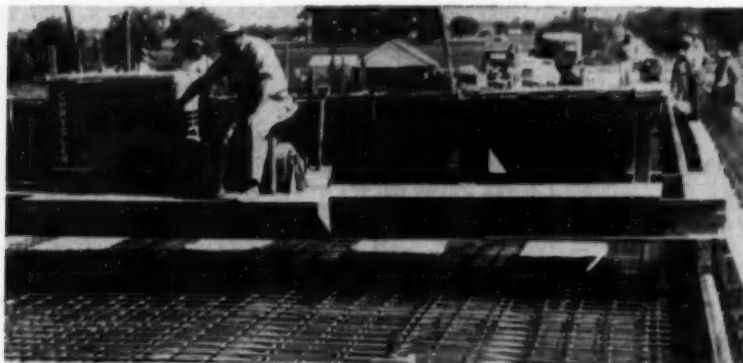


FORD'S 1956 LINE—A 36,000-lb gvw tandem-axle model and a longer wheelbase pickup are new additions to the Ford truck line. The 1956 models range from a 5,000-gvw pickup to a heavy-duty tandem-axle model with 42,000-gvw. Introduced for the first time as standard equipment are a safety steering wheel with a rim 3 in. above the horn button that gives the driver's chest added protection, and safety door latches that will not open in the event of a collision. Eight engines, with hp ratings averaging 17.3% higher than last year, power the 200 new models. Tubeless tires are now standard on all models, and power steering is standard on the tandem-axle trucks,

optional on others. The F-750, above, with a gvw of 21,000 lb, is powered by a Y-8 engine giving 168 hp when equipped with a four-barrel carburetor. Five different wheelbases are available. The new tandem-axle model, the T-750, has 144-, 156-, 175-, and 192-in. wheelbases bodies from 10 to 19 ft. A choice of engines is available—the standard 332 cu in., 192-hp Y-8, or a 332-cu in. Y-8 rated at 200 hp, when equipped with a four-barrel carburetor, dual exhausts, and a special fresh-air intake. The new 5,000-gvw pickup can be equipped with up to a 118-in. wheelbase, an 8-ft, 65.4-cu ft capacity box body.—**Ford Div., Ford Motor Co., Dearborn, Mich.**

CONVEYOR HOSE — A new flexible metal hose, designed to carry materials having abrasive and corrosive characteristics, such as cement, has recently been announced. Two types will be available—type U-100-L standard weight and type U-120-L heavy-duty. Both types will be furnished with a stainless steel liner unless a carbon is specified. Available in sizes from 3 to 8 in.—**Universal Metal Hose Co., 2137 S. Kedzie Ave., Chicago 23, Ill.**

NYLON CHALK LINE—A new stabilized spun nylon line has been introduced by Columbian Rope Co., primarily as a mason's line-chalk line, but is adaptable to a multitude of uses. It has a natural texture which allows more chalk to adhere to it. This line is waterproof in its natural form and is unaffected by most life-shortening organisms. Sizes 18 and 21 are available in 100-ft spools.—**Columbian Rope Co., Auburn, N. Y.**

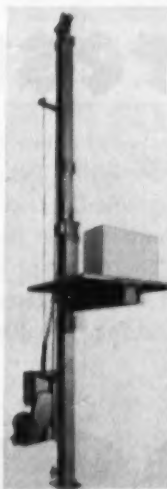


CONVEYOR FOR BRIDGES—A new concrete conveyor, said to be particularly useful in bridge construction, handles up to 80 cu yd of concrete an hr. In a recent test situation it poured concrete for a 200-ft bridge in half a day. The conveyor handles from 5

to 6 yd, carried in four separate hoppers. It weighs 5 tons assembled, motor included. Length of the conveyor can be varied in increments of 6 in. The entire unit can be moved by trailer and set on the tracks with a mobile crane.—**Penn Iron Works, Reading, Pa.**



LIGHTWEIGHT SAW—Like the other Maxaws, the new Cummins 757 features the "magic pivot" principle, which permits a deeper cut at a 45-deg angle. It also has instant leverlocking depth adjustment, whirlwind sawdust blower, calibrated sawguide slot and a blade-sighting slot that allows the operator to see the blade clearly as it cuts. The "magic pivot" feature achieves a depth of cut of 1 7/8 in. at 45 deg. Because 2-in. dressed lumber is only 1 5/8 in. thick, the blade has an extra 1/4 in. during the cut. This increases blade life, makes possible more sharpenings. The Maxaw, fitted with a 6 3/8-in. blade, weighs only 10 3/4 lb. It is priced at \$89.95.—**Cummins of the John Oster Manufacturing Co., Milwaukee, Wis.**



VERSATILE HOIST—The Hawkeye Hoist consists of a platform which rides on a single column that can be extended to almost unlimited heights by adding 6-ft sections. It can be erected by two men in 3 hr, according to the manufacturers. Because of the small area occupied by the column, the hoist is said to be suitable for places where

other types of towers or lifts might not be practical. When erecting the single H-beam column, additional sections are carried up on the hoist's own platform. With the addition of a stabilizer every 18 ft., there is no theoretical limit to the possible height of the column, which can be held with guy wires when there is no adjacent support. A steel cable passes over a pulley on top of the column to raise and lower the platform. It is operated by a 5-hp electric motor or gas engine. Load capacity is 1 ton.—**Hawkeye Engineering Co., Inc., Syracuse 4, N.Y.**



Firestone NYLON TIRES

YOU can move more dirt at lower cost with Firestone Nylon Tires because they are specifically engineered to cut downtime losses on the toughest job. The treads give more traction and they are extra tough to resist cutting. Double

thick sidewalls give added protection against cuts and snags.

The new Firestone Safety-Tensioned Gum-Dipped* nylon cord body insures longer tire life and more retreads. The Firestone Safety-Tensioned Gum-Dipped* nylon body gives the greatest pro-

tection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Let your Firestone Dealer or Store show you how Firestone Nylon Tires will cut downtime, give more retreads and keep tire costs at a minimum.

*T.M. Reg. U.S. Pat. Off.



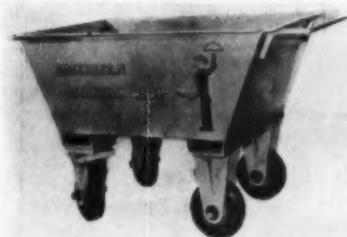
A TIRE FOR EVERY ROAD, LOAD AND CONDITION OF SERVICE

GROUND GRIP • ROCK GRIP • TRACTION ROCK • ALL NON-SKID • ALL TRACTION • RIB EXCAVATOR

When you buy new equipment or replacement tires, specify FIRESTONE

Enjoy the Voice of Firestone on radio or television every Monday evening over ABC

Copyright 1955, The Firestone Tire & Rubber Co.



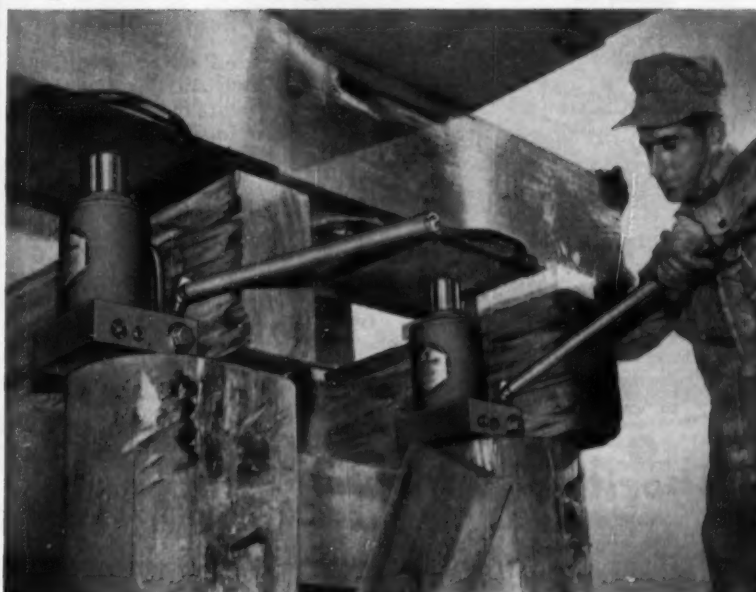
CONCRETE CART—The Mortar Hop is a concrete cart on wheels that can be hoisted by Ecmobile's high lift hydraulic loader and then easily moved about on the scaffold to serve individual mortar boards. Designed to serve a six-bag mixer, it has a 7-cu ft capacity, is 42 in. long, 25 in. wide and 28 in. high. The sides, ends and bottom are made of 3/16-in. plate with 4-in. channel reinforcing on the bottom. Wheels have 8.250 semi-pneumatic tires, and the rear wheels are swivel-mounted on shrouded bearings.—**American Road Equipment Co., Omaha, Neb.**

COLD WEATHER STARTING—A hydraulic starting system for diesel engines is said to eliminate the need for heavy-duty electrical systems in cold weather areas or when equipment is inactive for long periods. Called the Hydrostarter, the system consists of a hydraulic motor, a piston-type accumulator, an engine-driven pump and a manual pump for emergency recharging. No outside source of energy is required. The unit's high torque provides fast acceleration far beyond normal starting speeds in less than half a second. Its compact motor extends slightly more than 9 in. from the engine flywheel housing. According to the manufacturer, the average mechanic can install the unit.—**Allison Div. of General Motors Corp., Indianapolis, Ind.**



MOBILE STORAGE—An economical, theft-resistant and mobile storage for tools and materials needed on the job is designed to take the place of shanties and other makeshift storage huts. It is constructed of heavy galvanized rolled steel and a hardwood base and is available in lengths from 42 to 128 in., is 45 in. wide and 50 in. long. The largest model weighs less than 1,500 lb. without the trailer.—**Material Masters, Inc., 3508 W. Irving Park Road, Chicago 18, Ill.**

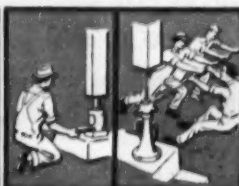
Here's how Blackhawk design speeds up jacking jobs



ONE MAN on a short handle quickly applies vast lifting tonnage. Above — two 50-ton Blackhawk Hydraulic Jacks supply precision raising and lowering to 1/1000 of an inch — promoting efficiency, safety and speed.



"Lightning Lift"
—Exclusive double pump construction for quick load contact and easy power lifting.



More Efficient! One-man operated Blackhawk Hydraulic Jacks are 94% efficient as compared with only 12 to 30% efficiency for mechanical jacks.



Easily Carried by One Man! Compact, lightweight Blackhawk jacks are easy to position in tight spots.



Exclusive design features prevent damage—eliminate costly delays on the job. Avoid many expensive repairs to jacks.

More ease, too!

This combination of big exclusive features is a sure key to less effort plus greater speed and better workmanship on jacking jobs. They are some of the reasons why Blackhawk Hydraulic Jacks are so superior.

You also have extra utility — by attaching a gauge (do it yourself easily) to test, weigh, etc. And Blackhawk Jacks last longer and are so trouble-free because they are fortified with exclusive design features proven by 27 years of field experience. Get Blackhawk Jacks (at new low prices) from leading supply houses.

Bank on Blackhawk for the
**MOST COMPLETE LINE
OF HYDRAULIC JACKS**
... 1½ to 100 Tons



BLACKHAWK®

HYDRAULIC TOOLS • HAND TOOLS

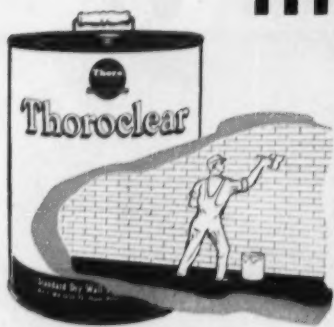
BLACKHAWK MFG. CO., J-23105,

Milwaukee 46, Wis.

The THORO System of Masonry Protection

THOROCLEAR

Invisible Water Repellent



Ask your dealer about this powerful silicone water repellent developed by years of research by General Electric Company and now produced by us for your protection. Ask for Circulars No. 30 and 31.

No change in color or texture of brick, limestone, sandstone, tile or stucco surfaces. Applied by brush or spray.

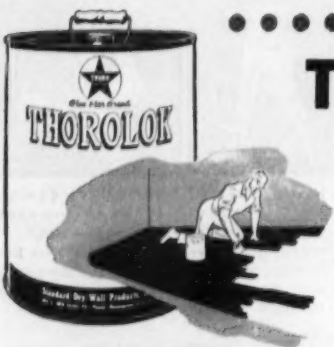
Keep water out of your masonry walls and protect interior plaster, paints and expensive furnishings.



THORITE

20 Minute Set Patching Compound

Repair those broken sills, steps, concrete floors, chimneys and other defective masonry! Ask for circular No. 20.



THOROLOK NO. 100

Use it for your basement or factory floors. New, with special alkali resistant pigments. Ask for Color Card 32-C.

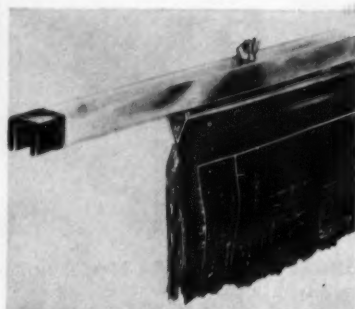
Manufacturers of

WATERPLUG, THOROSEAL, QUICKSEAL

for all types of
masonry protection!

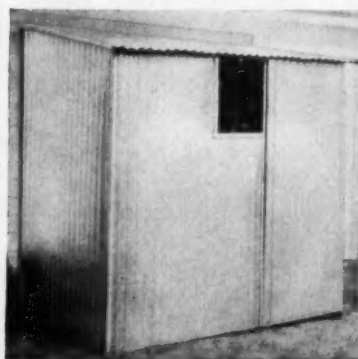
GET OUR PICTORIALLY DESCRIBED
LITERATURE "HOW TO DO IT"

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNSYLVANIA



HOLDS PLANS—From one to 150 plans may be filed together neatly and securely without punching holes or mutilating them in other ways. The Plan Hold is made of aluminum with rounded edges and plastic tips to protect desks or reference tables. Loosen two wing-nuts in the end of the holder and the Plan Hold snaps open. Tighten the nuts and plans are securely held.—Plan Hold Div., Air Comfort Co., South Gate, Calif.

FOR CONCRETE SAWING—A new concrete sawing blade, designed with a lip of tungsten carbide overlapping the leading edge of the land, reduces wear to the vulnerable diamond segment to a point where it no longer influences the life of the blade, according to the manufacturer. The tungsten lip is said to be the answer to excess wear of the steel center directly beneath each diamond segment. The diamond blade is used for sawing contraction joints in green or cured concrete and eliminates forming joints when pouring. The new blades, called DM190, are said to cut up to 10 ft per min at a depth of 2 in., depending upon aggregate used in the mix and machine horsepower.—Carborundum Co., Niagara Falls, N.Y.



WEATHERPROOF SHED—The Alumina Shed is a weatherproof construction hut built with corrugated sheet aluminum that can be erected in less than an hour. It can be spiked or bolted to earth, concrete or other solid base, and can be fitted with floor boards. Model 107S, measuring 4x6x6½ ft high at the door, sells for \$129.50.—Leighton Products, 104 Greenleaf St., Rochester, N.Y.

Contractor's Facts in Photos...



22½ CUBIC YARDS SPEED to fill on 1200-foot haul road for Wenger Bros., Inc., Pottstown, Pa. Shown above is one of three Athey-Cat Rear Dump Haul Units purchased early this year to haul rock on 4-mile section (35-B), of the Pennsylvania Turnpike, near Norristown, Pa.



GANGING UP ON SHOVEL, one Athey PR21 (right) waits while the other PR21 is being loaded. The PR21-Cat DW21 Wheel Tractor unit has speeds up to 25 MPH. Hydraulically-boosted steering permits easy turns within 34 feet. That's why Wenger Bros. say, "PR21s are easy to handle and position for the shovel."

DEEP-BELLIED DESIGN of PR21 (left) permits big-capacity loads. Body, 14' x 9', presents wide open target for the 2½ yd. shovel. Shovel bucket need be raised only 9½' — shovels swing less, dump more. Rugged construction easily takes the pounding of big rock loading.



WITH BODY UP, PR21 (left) dumps rock load in seconds. Wenger Bros. finished this Turnpike job on schedule; are now using the PR21s to help Army Engineers build and extend runways at Phillips Field, Aberdeen, Md. Get all the facts on the PR21 at your Athey-Caterpillar Dealer.

ATHEY PRODUCTS CORPORATION

5631 West 65th Street Chicago 38, Illinois

Here is

Proof of LOAD DISTRIBUTION

The figures given in this ad were scaled at the Centerline Tank Plant, Detroit, Michigan by representatives of the Weightmasters Division of the Michigan State Highway Department.

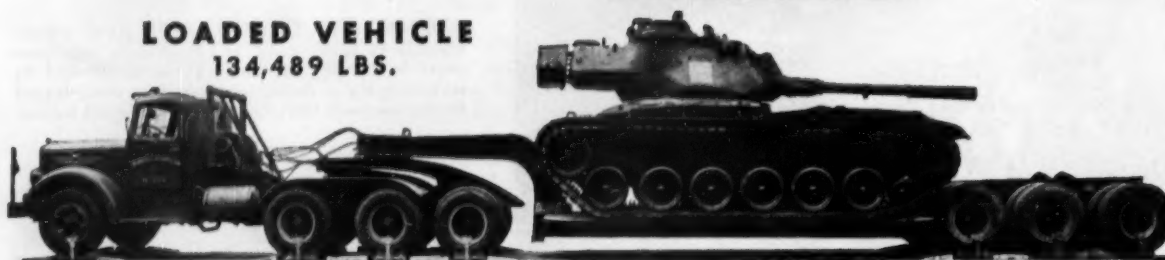


EMPTY VEHICLE
41,340 LBS.

WEIGHT OF LOAD
93,149 LBS.



LOADED VEHICLE
134,489 LBS.

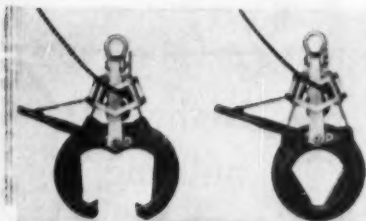


	AXLE NO. 1	2	3	4	5	6	7	TOTAL WEIGHT
AXLE WEIGHT—LBS.								
EMPTY VEHICLE	81% 8220	37% 7660	36% 7440	24% 4920	22% 4420	20% 4450	20% 4230	30% 41,340
WEIGHT OF LOAD	19% 1820	63% 13100	64% 13040	76% 15270	78% 15870	80% 16909	80% 17140	70% 93,149
LOADED VEHICLE	10040	20760	20480	20190	20290	21359	21370	134,489
TIRE SIZE	10:00	10:00	10:00	10:00	11:00	11:00	11:00	
NO. TIRES	2	4	4	4	4	4	4	26
TOTAL TIRE WIDTH	20	40	40	40	44	44	44	
AXLE SPACING	1 to 2 11 ft. 6 in.	2 to 3 4 ft. 6 in.	3 to 4 4 ft. 0 in.	4 to 5 25 ft. 1 in.	5 to 6 4 ft. 1 in.	6 to 7 4 ft. 3 in.	FIRST TO LAST 53 ft. 7 in.	



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY



PUSH-BUTTON HOOK — A pneumatically operated lifting hook is electrically controlled by push button from the cab. Available in 6-ton and 12-ton capacities, it cannot open under any load within its capacity. The heavy duty welded and reinforced hook is especially suited to handling concrete buckets. —Gar-Bro Manufacturing Co., 2415 E. Washington Blvd., Los Angeles, Calif.

PROTRACTOR RULE—A jointed stainless steel 2-ft rule, which also serves as a protractor, is a useful aid for mechanics and draftsmen to measure longitudinal, as well as angular dimensions, avoiding time-wasting difficulty of counting fine graduations. The rule has an accurate scale of chords engraved on one side from 0 to 120 advancing by half degrees, and it is also provided with two center dots, one on each blade, by which when using a pair of ordinary dividers, the rule can be set to any desired angle, or vice versa, any angle can be determined. The stainless rule has graduations reading in 1/8, 1/16, 1/32, and 1/64 in. The joint is provided with a spring tension which supplies sufficient friction to hold the angle setting rigid for scribing and layout work. The price of \$3.50 for this rule is below that of a spring-tempered 2-ft. rule. —George Scherr Co., Inc., 200 Lafayette St., New York 12, N. Y.



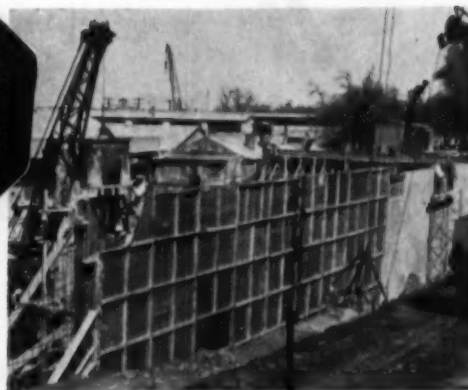
SABRESAW—A lightweight attachment for air or electric drills converts them into reciprocating hack saws. The SabreSaw attachment, operated by a ball-bearing reciprocator that whips the blade back and forth at a 1-1 ratio with the driver spindle, weighs only 3 lb, 3 oz, is 7 1/4 in. long and 2 5/8 in. in dia at its widest point. It will fit any air or electric drill of 1/4-in. or larger capacity. Other features are easy blade cleaning, gearless operation, pre-lubrication, and a "rifle-sight" pointer and steady rest rocker that permit accurate cuts. Priced at \$45. —Thor Power Tool Co., 175 N. State St., Aurora, Ill.

THE GATES FORM-ula

can save you money
...on high walls
or highways!

SAVE through speed! Gates Form Ties require minimum waling...reduce labor time.

SAVE on materials and labor! Gates Form Ties saved up to 30% on the job!

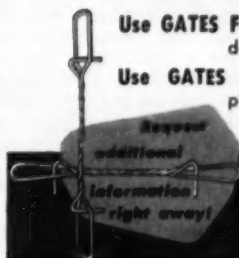


Gates Form Ties used on 20-ft. concrete wall...an addition to the Dearborn Stone Company Plant, Dallas, Texas.

Contractor: O'Rourke Construction Co., Dallas

Use GATES FORM-ula on: high walls—culverts—bridge abutments—foundations—retaining walls!

Use GATES FORM-ula with: Sheathing—metal panels—plastic-coated plywood panels.



GATES & SONS, INC.

80 S. GALAPAGO, DENVER 23, COLO.

for the BEST SERVICE



under the WORST CONDITIONS
"Chrome Clad" STEEL TAPES
are preferred by engineers

When you go out on the job, you want the most durable steel measuring tapes you can get — Lufkin "Chrome Clad." The jet black markings won't wear off, for they are bonded to the line and protected by multiple electroplatings that further build up the fine tape steel from which the line is made. The resulting line is heavier, stronger, and most rust and corrosion resistant. It is easier to read, easiest to clean, and won't surface crack, chip, or peel. Only Lufkin tapes are available with Chrome Clad.



THE LUFKIN RULE CO.
Saginaw, Michigan

The Lufkin Rule Co., Saginaw, Michigan
Please send me your illustrated catalog of measuring tapes and rules.

Name _____

Address _____

City _____ State _____

303

4 LEBUS BINDERS HOLDING 158,000 lbs.

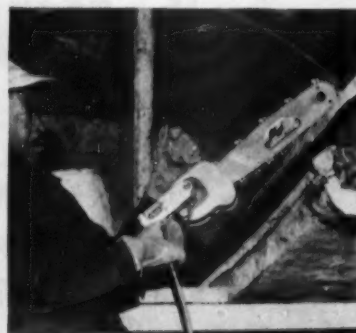
Pictured is a portion of a 158,000 pound vessel being transported by the Musselwhite Trucking and Rig Building Company. Shown here are two of the four LEBUS LOAD BINDERS used to hold this load... further proof that truckers depend on LeBus Load Binders for **STRENGTH, SAFETY and REAL HOLDING POWER** when transporting valued loads. Make it a safe load... bind it with LeBus Load Binders!



LEBUS
**LEBUS ROTARY
TOOL WORKS, inc.**
Phone Plaza 9-2771
P. O. BOX 2352 • LONGVIEW, TEXAS



1956 ECONOMOBILE — The new model 600 Economobile still features a hoisting height of 18 ft and a payload capacity of 1,500 lb, but its appearance has been changed with its boxed chassis and loader now integrated into a unit. The Economobile features a 35-hp Continental Red Seal engine, larger tires with wider tread, a turning radius of 16 ft, 2 in., and 6-ft reach from tractor wheel to the heel of the fork. The Economobile is 15 ft, 6 in. long, 85 in. high and 95 in. wide. Weight without attachments is approximately 7,000 lb, wheel base is 90 in.—American Road Equipment Co, 4302 N. 28th St., Omaha, Neb.



CLOSE-QUARTER SAW—A pneumatic chain saw will prove useful when working in cramped places. The operator simply plunges the round nose of the cutting bar through the timber and then works it up and down. Even if the timber is hemmed in on three sides, it can be cut in this manner. Model 2P18 has cutting bars available from 18 to 30 in. long. Because it is built of rust-resistant aluminum, it is light enough to be handled with one hand. Other features include an automatic motor oiler, a trigger throttle and a sturdy 3/8-in. chain drive. It is priced at \$240, including repair kit, assembly tools, gear lubricant and air hose.—Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.



Marlow Pumps keep 'em rolling

It costs the S&M Construction Company of Providence, R. I., \$500 per hour to tie up this two-cubic-yard batch paver. That's why there's a dependable Marlow Engine-Driven, Self-Priming Centrifugal Pump mounted on this tank truck. This small pump assures a steady supply of water at 30 p.s.i. to feed the mixer tank... without interruptions or break-downs.

For complete information on Marlow AGC rated pumps, see your Marlow dealer today or write for Bulletin C-04.

MARLOW PUMPS
Ridgewood, New Jersey

Division of Bell & Gossett Company



LOAD ROCK IN NARROW CUTS

Clearing rock from narrow cuts is just one of the numerous tough jobs which the heavy-duty Eimco 105 is particularly suited.

The Eimco 105 Tractor is a completely new conception in tractor design. Every part of this tractor is so superior to the corresponding part on conventional tractors that it must be seen and inspected to be appreciated. Here are a few of the items that you must compare: (1) The transmission — located in front for easy accessibility and containing all gearing and clutches for speed changing and reversals and steering, (2) Torque converter drive

without master clutch, (3) Front position for the operator to permit full visibility, (4) Only two small handles to control all motions of the machine through the power shift transmission, (5) Two final drives to permit easy maintenance and independent operation of each track, (6) One piece cast alloy steel track rollers, (7) Heavy alloy steel construction throughout, (8) Heavy cast alloy-steel track pads and many other items all standard equipment on Eimco Tractors.

In addition to these features there are many other features of superior quality that are not out-

wardly visible, such as: Clutches so designed that they never need adjustment, All shafts and gearing work in anti-friction bearings of the ball or roller design, Bearings fit into individual alloy steel cages, Full pressure lubrication to all points in the transmission, Unit construction for easy service, Heavy, short shaft design, Precision heat treatment of all parts and many other superior features.

Eimco invites you to operate the 105 Tractor, see for yourself how this new design and truly modern tractor takes all the work out of operating this type of equipment, permits a man to do more efficient work all day without tiring, allows him to see what he's doing without standing up.

The Eimco Tractor has proved its superiority on hundreds of jobs. You must investigate and compare this tractor with ANY other before you buy.



THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N.Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash.
Pasadena, Calif. Houston, Texas Vancouver, B.C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa



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AIR POWER *speeds trenching jobs*



faster work.....

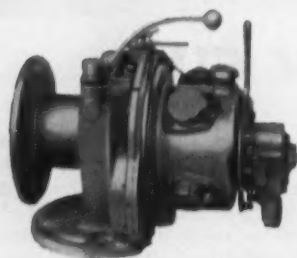
lower costs



DIGGERS—One man operating an Ingersoll-Rand Digger loosens more material than six or eight men using ordinary hand methods. Six sizes are available, ranging in weight from 19½ to 37½ pounds.



SUMP PUMPS—An Ingersoll-Rand Sump Pump should be kept on hand for all trenching jobs. In cases where water problems arise the immediate application of a Sump Pump means the difference between profit and loss. Two sizes are available, the Size 250 and the Size 35.



UTILITY HOISTS—Ingersoll-Rand's Utility Air Hoists are used effectively for backfilling, pipe and material handling. These Hoists can be mounted in any position—pole and column mountings are also available. There are twenty sizes having single line capacities up to 3500 pounds. Capacities may be increased many times with sheave blocks.—A little air goes a long way with these popular Hoists.



BACKFILL TAMPERS—Ingersoll-Rand's Backfill Tampers are one of the contractor's greatest time saving tools because the Tamper, not the man, does the work. They provide a solid fill with no subsequent ground settlement and they are easy on the operator.



Ingersoll-Rand's latest rotary, portable Air Compressor—Four models—105, 210, 315 and 600 cfm at 100 pounds full rated air pressure.



Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

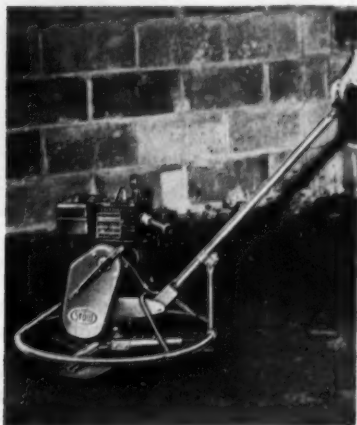


18A-292

PUMPS • CONDENSERS • AIR AND ELECTRIC TOOLS • ROCK DRILLS



GRADING MARKERS—A clearly marked paper sleeve that is placed over the grading stake enables an operator to read grading marks from as far as 600 ft away. The sleeves are marked in the office and then stapled to the guard stake. The amount of cut or fill is shown beside a rule graduated in hundredths. Water-resistant treated paper and India ink markings give the sleeves a life expectancy of several months. —Hargus Markers, 501 W. H St., Brawley, Calif.



SMALLER ROTO - TROWEL—A lightweight 24-in. rotary trowel can be put on the job soon after concrete has been laid. Similar in design to the 34-in. Roto-Trowel (CM&E, Dec., 1954), the new model G24 weighs only 69 lb, features a spring-loaded clutch actuated by a leaf spring connected to a lever on the handle. This provides a dead-man control that stops the machine from rotating the instant the operator lets go of the handle, but does not stop the engine. The G24 has a Briggs and Stratton engine rated at 2.2 hp, said to be the most powerful of the smaller trowel engines. A knob on the handle adjusts the blade pitch while the machine is in motion.—Stow Manufacturing Co., 31 Shear St., Binghamton, N. Y.

**4200
TWO-TON BLOWS
PER MINUTE!**



Here's **TREMENDOUS COMPACTION**

... for rapidly and most economically achieving or exceeding specified densities in the consolidation of rock, slag, soil-bound macadam, gravel and sand base courses. Only one pass of the Jackson Vibratory Multiple Compactor is usually required to thoroughly compact a full, standard course. Likewise, in rock and slag when sufficient fines are spread, all voids from top to bottom can be filled chock full with one pass of this machine. Standard width is 13', 3"; working speeds: Up to 60' per minute; reverse: Up to 5 MPH.

PAVEMENT WIDENING — LARGE AREA FILLS, ETC.

The Jackson Multiple is also the very finest equipment to be had for compacting the sub-base and base courses in pavement widening projects. By towing the compacting units at the side of the tractor, any granular material used for this purpose can be compacted to specified density in just one pass (compactor bases overlap). Large fills is another area in which this machine really shines. It's fast, thorough and very versatile; gets into places other machines can't reach. And for the really tight spots one or more of the compacting units may be detached, fitted with operating handle and used as a standard Jackson Manually Guided Compactor (self-propelling). By all means see this extremely advantageous equipment at your nearby Jackson distributor who has it both for rent and for sale. Distributor's name and literature on request.



The MULTIPLE on base course of a widening job 36" wide, 9" thick. One of the compacting units fitted with operating handle and used individually.



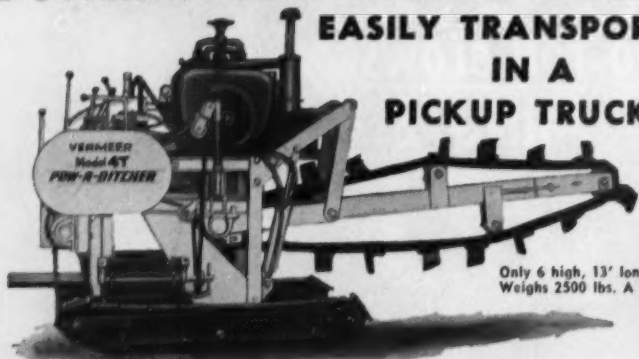
JACKSON
VIBRATORS, INC.
LUDINGTON, MICH.

POWERFUL NEW "MIDGET DITCHER"

EASILY TRANSPORTED

IN A

PICKUP TRUCK

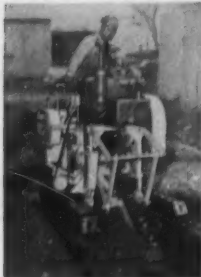


Only 6' high, 13' long.
Weights 2500 lbs. A real workhorse.

ONLY 42" WIDE

VERMEER MODEL 4T POW-R-DITCHER

Digs 6" to 14" Wide and 4 1/2' Deep



Here's the "midget ditcher" they are talking about! The 4T POW-R-DITCHER is designed specifically for laying gas pipe, water and cable lines and digging foundation footings. Its narrow width makes the 4T ideal for those "tight spots." Digs at speeds of 1' to 17' per minute, depending on depth and soil conditions. Powered by a 15 or 25 h.p. Wisconsin engine. The 4T POW-R-DITCHER is built for service and answers the need for a small, rugged inexpensive ditcher. A self propelled and one-man operated machine. Has same size moving parts as larger POW-R-DITCHER models. Write for name of distributor and complete information. Larger POW-R-DITCHER models also available.

VERMEER MANUFACTURING CO., PELLA, IOWA

*You can be
Sure...*

**when PROTECTIVE
MAINTENANCE is due**

HOBBS ENGINE HOUR METERS make it easy to plan a definite program of protective maintenance on your powered equipment. ON-TIME maintenance means longer equipment life . . . less down-time . . . fewer repairs — a more profitable operation in the long run.

ACCURATE—Not a Revolution Counter

The HOBBS HOUR METER records ACTUAL RUNNING TIME on all types of powered equipment — stationary or mobile — gasoline or Diesel. This electric timing instrument tells you the HOURS and MINUTES of engine operation — important accuracy no revolution counter can provide.

APPROVED BY LEADING MANUFACTURERS
Installed as original equipment or recommended as an approved accessory by leading construction equipment manufacturers. Ruggedly built — easy to install. See your factory branch, representative or distributor . . . or WRITE:

John W. Hobbs Corporation
2070 YALE BLVD. SPRINGFIELD, ILLINOIS
World's Largest Builders of Running Time Meters

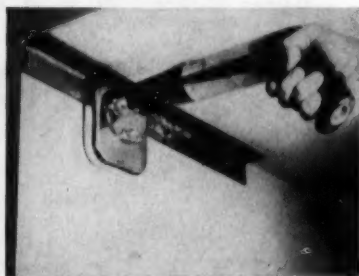


**HOBBS
Engine Hour
METERS**

*Now and Improved
Through Continuing
Engineering Research*



SINGLE ENGINE MIXER—The new Hydromixer processes 6 1/2 yd of concrete in travel, with less than a 32,000 lb load on rear tandem axle. The Hydromixer features a hydraulic drum drive that is powered by a front mounted, two-speed take-off that eliminates the need for an extra engine. Charging, mixing and discharging are controlled by a two-way hydraulic valve which practically stops rolling or surging according to the manufacturer. Total weight is only 7,100 lb, permitting maximum payload and water capacity. Wheelbase is 193 in.—Willard Concrete Machinery Sales Co., 11700 Wright Rd., Lynwood, Calif.



POWDER POWERED TOOL—The Creary Drive-It 330, is less than 6 lb. in weight and only 13 in. in length but packs a healthy .25 caliber wallop not hitherto found in tools of this size. It is also adaptable to a .38 caliber drive but will handle nearly all jobs in its lighter caliber, according to the makers. Of improved design it features a snap-open breech action with automatic cartridge extractor, molded rubber pistol grip and fore-grip with the rest of the tool in polished chromium finish. It "field-strips" into just three segments for complete cleaning. Though Powder Power recommends two-handed use of all Drive-It tools the "330" can be used with one hand where it is physically impossible for a workman to use two. It comes packaged in a portable steel case with accessories. Uses 56 different sizes and kinds of drive pins which makes it applicable to electrical construction, plumbing, heating and ventilating work, plastering, wood and steel construction and general construction of nearly every sort.—Powder Power Tool Corp., 7527 S. W. Macadam Ave., Portland, Ore.

Shown here a DW-21 Tractor-Scraper, manufactured by Caterpillar Tractor Co., Peoria, Illinois, is being loaded on the Martin trailer. The rear-loading feature of this trailer permits loading of the big tractor-scraper without dismantling—a big time-saver. The high-strength light-weight construction of the trailer plus proper load weight distribution allows it to haul loads up to 27 tons, yet keeps towing effort to a minimum, reduces tire and brake wear, lowers operating and maintenance costs. Martin trailers are distributed through Caterpillar dealers all over the world.



MARTIN MACHINE COMPANY USES

USS MAN-TEN HIGH STRENGTH STEEL to reduce weight. increase strength

The transportation of heavy-duty construction equipment can be a major factor in the operation of any contracting firm. Big, heavy-duty earth-movers are hard to move without proper equipment. To fill this need Martin Machine Co., Kewanee, Illinois, designed the heavy duty rear-loading trailer shown here. "Our problem," explain the engineers at Martin "was to build a trailer to haul a capacity load of from 25 to 27 tons and stay within legal axle limitations. This meant the elimination of all unnecessary deadweight. It would have to be built lighter without sacrificing strength for capacity payloads. We answered this challenge and solved the problem by using USS MAN-TEN High Strength steel. We have eliminated 1000 pounds of deadweight from this

particular model."

United States Steel produces three different grades of USS High Strength Steel—COR-TEN, MAN-TEN, and TRI-TEN—each having distinctive characteristics and each recommended for certain end uses where its specific properties will assure longer service and greater over-all economy. All three grades have a yield point 50% higher than carbon steel and all offer properties which allow greater strength and toughness to be built into vital parts of machinery, equipment and structures.

In the construction industry these steels can be used to replace carbon steel in various parts of trucks, dozers, shovels, scrapers and other such equipment to increase capacity and service life without increasing deadweight.

in heavy-duty trailer

NOW AVAILABLE

Our new "Design Manual for High Strength Steels" is ready for distribution. This excellent book contains comprehensive and practical information that you will find extremely useful in designing your product for greater economy and efficiency by the sound use of high strength steels.

For your free copy, write on your company letterhead giving your title to United States Steel Corporation, Room 4871, 525 William Penn Place, Pittsburgh 30, Pa.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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USS MAN-TEN High Strength STEEL



B-1610

UNITED STATES STEEL

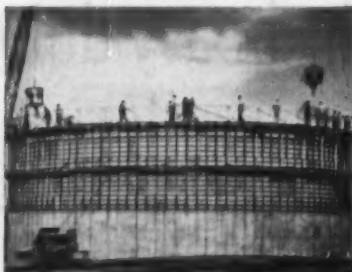
UNI-FORM Concrete Forms

**3 SIMPLE ELEMENTS
FORM ANY CONCRETE
STRUCTURE**



UNI-FORM Concrete Forms are prefabricated steel-framed, plywood faced panels . . . ready to use when they reach the job. UNI-FORM Ties and Keys lock and spread Panels into an automatically accurate form. No measuring — no guesswork. Completely versatile . . . they form straight, battered, circular, irregular or curved walls at lowest all around cost.

*Rented . . . Sold . . .
Rented With Purchase Option*



HIGH SPEED CIRCULAR WALL FORMING

UNI-FORMS provide faster, simpler and easier circular wall forming . . . one side alignment and bracing . . . absolute control of concrete, and safer, cleaner working areas.

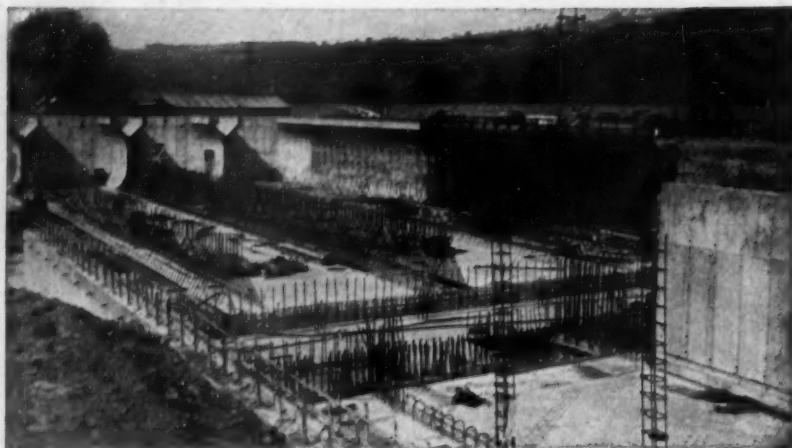
*Write for the
UNI-FORM Catalog
and complete details*

**UNIVERSAL
FORM CLAMP CO.**

1238 N Kostner Ave
Chicago 51, Illinois



Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



MECHANIZED FORMING with new "Y" wall trusses and UNI-FORM Panels speeds construction, saves labor and material

Field reports on a new system for forming "Y" walls in aeration tanks and settling basins indicate very satisfactory operation and important labor and material saving advantages for the system.

Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

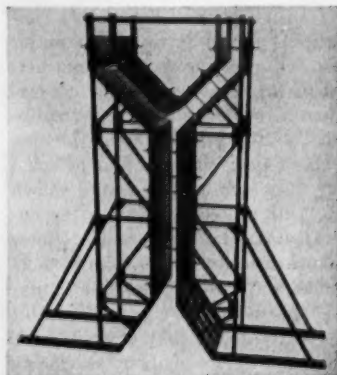
Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiriloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall form-

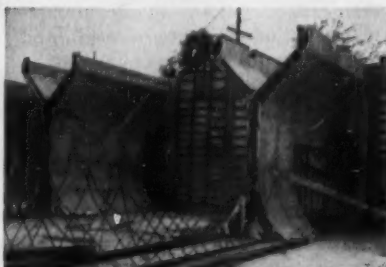
pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

In this way, faster forming cycles, using minimum UNI-FORM equipment are pos-



ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels



STRIPPED WALLS are clean and accurate. The system eliminates the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

Erection, stripping and movement of the form can be handled either as individual

sible, resulting in lower labor and material costs. UNI-FORM Panels are rented or sold, or rented with an option to purchase.

For complete details on Universal "Y" wall forms and UNI-FORM Panels, Write:

UNIVERSAL FORM CLAMP CO.
1238 North Kostner Avenue
Chicago 51, Illinois

Distributors and Branches in Principal Cities



EARTH BORER—Without removing soil, the earth borer makes a 2-in. hole through the soil under concrete walls or driveways. Manufacturers say the vibratory borer will hold a straight line, is easy to handle and operate, and will cut the time required to bore conduit holes or pipe lines.—**Mall Tool Co., 7725 S. Chicago Ave. Chicago 19, Ill.**

TRENCHER—Newest addition to the Ditch-Witch trencher line, the Model LD features a variable speed transmission and completely new design. Capable of various speeds while digging, the unit is recommended by the manufacturer for trenching service lines for small diameter pipe and electric cable, shallow footings and many other applications. Controls are conveniently located for operating the trencher from the seat or while standing beside the machine. The standard 6-in. width bucket line is hydraulically controlled to a depth of 36 in. The bucket line is closed, self-cleaning and has replaceable tool-steel teeth. Spoils can be deposited on either side of the trench with the reversible spoils chute. Rubber-tire mounted, the machine weighs only 1,150 lb.—**The Charles Machine Works, Perry, Okla.**

**WHERE
TO BUY**

SIGHT LEVELS INSTANTLY!

STRATEX SURVEYING Hand Level

'12

STRATEX INSTRUMENT CO., INC.

STRATEX SURVEYING CO., INC. 1000 N. WILSON ST. LOS ANGELES 10, CALIF.

10-YEAR REPORT on trailers...

Telephone: Taylor 94220

Branch Office
617 N. Mayne Ave.
Chicago 12, Illinois

General Office
2000 W. 30th Street
Milwaukee 8, Wis.

Telephone: Diverse 43510

February 9, 1954

Mr. Robert Punks, Sales Manager
LaCrosse Trailer Corporation
LaCrosse, Wisconsin

Dear Mr. Punks:

You will be interested to know that Shea-Matson currently owns about 40 of your 20-ton capacity LaCrosse low-beds, many of which have been in regular use for as long as 10 years. (We also operate about 90 low-beds of other makes).

Although our main office is in Milwaukee, we handle all kinds of heavy duty contract hauling all over the United States, so you can see that our trailer fleet gets considerable wear.

The reason we've gradually increased the number of LaCrosse units to the point where they now comprise two-thirds of our entire fleet, is because we have found that LaCrosse trailers can withstand the roughest kind of treatment with little or no maintenance.

Your trailers stand up very well under all conditions, and we have found that they do not rack, tilt, or twist under eccentric loads, or on uneven surfaces. The walking beams are especially well constructed. In addition, the brakes on our LaCrosse units seem to last much longer than we normally expect from trailers getting the heavy wear and tear we give them.

We particularly like the light weight of LaCrosse trailers because this permits us to haul heavier loads while keeping within the legal axle-weight limits of any state in the entire country. You can easily see where this feature saves us a great deal of unnecessary trouble and expense in interstate hauling.

You have our permission to use this letter in any way you see fit.

Sincerely yours,
SHEA-MATSON
Mott Flach,
Traffic Manager

ME:nl
PLANT ERECTING and DISMANTLING • MILLWRIGHT ERECTING

When leading contract haulers, whose living depends on their trailers, prefer ONE particular low-bed 2 to 1, there must be good reasons.

Take Shea-Matson Inc., for example. During the past 10 years, this nationwide operator has experimented with all types and makes of trailers. In addition, they've kept accurate payload and maintenance records on each one. So, when you learn that Shea-Matson Inc. has already converted 40 out of 60 of their low-beds to LaCrosse, it's a pretty good indication that LaCrosse is the best buy for you, too.

Thanks to larger volume, production, LaCrosse trailers often cost up to 38% less than other low-beds. You also save up to 2000 lbs. of useless dead-weight, which enables you to haul an extra ton of legal payload. But the real reason why experienced haulers prefer LaCrosse trailers is because they're built better to last longer. Bigger, safer brakes! Stronger, longer lasting main frame and deck! Stronger axles and wheels! Write today for free descriptive literature on job-proved LaCrosse low-beds — 6 to 75-ton capacity — with flat, drop or tilting platforms. LaCrosse Trailer Corp., LaCrosse, Wis.

LC-34

LaCROSSE
America's Favorite LOW-BED TRAILER



Bigley Bros. Inc. of New York City have earned a reputation as specialists in steel girder transportation.

Among several interesting jobs were the hauling of all the steel for the United Nations Building, the New York City Post Office and New Jersey Turnpike Bridges.

Typical of girders hauled up to 110 feet long weighing as much as 95 tons is this girder for the New York Through Way. The front end is mounted on a 75 ton Rogers Low Bed Trailer with the rear on a 35 ton Rogers Pole Trailer.

The confidence displayed in Rogers Trailers by outstanding contractors and riggers suggests that you should thoroughly investigate this complete line before purchasing any such equipment.

EXPERIENCE

builds 'em

PERFORMANCE

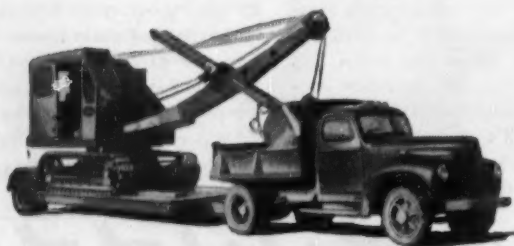
sells 'em

ROGERS BROS. CORP.

ALBION, PENNA. CABLE: BROSITES

Export Office: 50 Church St., New York 7, N. Y., U. S. A. Cable Address: BROSITES

220 Orchard Street



Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

STEAM HOSE—A new data sheet describing its line of steam hose has just been published. According to this sheet, the company's Burstproof steam hose cannot burst. A braided steel wire used for interior reinforcement gives extra strength, yet the hose stays flexible. A special heat-resistant rubber cover resists heat, hardening and cracking. The sheet also includes illustrations and specifications for BFG Superheat steam hose, wrapped steam hose and steam ironing hose.—**The B. F. Goodrich Co., Industrial Products Division, Akron, Ohio.**

CRENLO, INC.—Cabs for construction equipment are pictured in two product illustration sheets recently issued. They describe the Model 1105 AM winterized enclosure and cabs for Caterpillar, John Deere and International Harvester tractors, Allis-Chalmers four-wheel prime movers and a Whiting trackmobile.—**Dept. KP, Crenlo, Inc., Rochester, Minn.**

PULLEYS—Publication of an 8-p brochure describing Hi-Lo automatic variable speed pulleys and Hi-Lo systems has been announced. The brochure lists the advantages of the pulley and is documented with graphs, diagrams, cutaway views and photos of the unit in action. Specifications and list prices of the pulley are given, and a page is devoted to the Hi-Lo system, supplemented by complete speed range tables. For copies of the literature, write **Dept. KP, Equipment Engineering Co., 2853 Columbus Ave., Minneapolis 7, Minn.**

METAL GRATING—A 16-p data and specification manual covering grating, open steel floor armor, stair treads, vessel liners, bridge decking and drain grates includes safe load tables for all basic types of gratings, panel width constant charts, tables on standard widths and types of stair treads, etc.—**Published by the Klemp Metal Grating Corp., 6605 S. Melvina Ave, Chicago 38, Ill.**

ARMCO BUILDING—A new 24-p manual (SX-2054) on steel buildings covers series S Type 1; Type 2; and Type 3 buildings; Multiple-Span buildings; and Lean-To Units. Accessories are described and instructions for erection and finishing are included.—**Armco Drainage & Metal Products, Inc., Middletown, Ohio.**



THIS GMC W630-50 IS ONE OF A BIG TEAM that worked New Jersey's Garden State Parkway job. Its power to hustle on 8-yard

transit mix comes from GMC's new 225-h.p. Blue Chip gasoline engine. Its extra-capacity axles are rated at 11,000 lbs. front—36,000 lbs. rear.

They keep you on top of fast-moving jobs

EVEN tough, clock-racing jobs like road-building are no problem to contractors using the new GMC Blue Chip tandems.

That's the kind of fast-moving work they're built for. They step along so smartly—swinging top-capacity loads—that you can figure on them for extra trips per day.

New high-torque engines do that. There's a choice of 6—short-stroke sixes, V8's and Diesels. And each one has a horsepower reserve that makes light of the heftiest hauls—pulls you through the roughest going *fast*.

Nine of Them are Hydra-Matic*

You can team this Blue Chip power with money-saving Hydra-Matic in 9 of the models. That's automatic protection against day-after-day punishment that murders ordinary trucks. Manual-shift versions now have big 2-plate 14-inch clutches.

That's the tip-off on their all-over ruggedness. There are massive new frames. *Full-length reinforce-*

*ments,*** when necessary, are factory-installed. Axles—front and rear—are over-size. Wheels are of a rugged, new design. And Safety Power Steering** makes jockeying—even down in the pit—a snap.

There are 19 of these GMC Blue Chip tandems in all—completely blanketing the 28,000 GVW—70,000 GCW range. Get a complete run-down at your GMC dealer's—now!

*Hydra-Matic standard on many models; optional at extra cost on some others

**Optional at extra cost



GMC TRUCK & COACH
A General Motors Division



Bethlehem Hollow is used in construction at Erie Mining Company taconite project, north of Aurora, Minn., and at Taconite Harbor on Lake Superior (above). Plant Contractor: Foley Constructors of Minnesota (Foley Bros. Inc., St. Paul Minn., and Pleasantville, N.Y.); Harbor Contractor: Dravo Corporation, Pittsburgh. Drill steel reconditioned by Barrett Drill Service, Eveleth, Minn.

Moving 4 Million cu yd of Hard Rock for Taconite Development Program

To help conserve the nation's supply of vital iron ore, the Erie Mining Company is playing a leading role in the development of a new industry, taconite mining, near Aurora, in northern Minnesota. The project is a huge one. The rock must be blasted, and crushed to fine powder. The ore, recovered magnetically, is then rolled into small balls, which are specially treated to develop hardness for easy handling. The end product, taconite pellets, has an iron content of more than 60 pct.

Site of the development, not long ago a wilderness, is now bustling with activity. An entire new community has been built. Mill buildings and dock facilities are well advanced, and a railway is under construction.

The operation involves the excavation of approximately 4 million cu yd of hard rock. Bethlehem Hollow Drill Steel, in 1-in. hexagons and 1¼-in. rounds, and fitted with carbide-

insert bits, is used exclusively in this task. About 85 pct of the drilling is being done by wagon drill, the rest by jack-hammer. Normal blast-hole depth is 17 ft.

Bethlehem Hollow Drill Steel is ideal for all kinds of rock-removal jobs because it is rolled from a tough, fatigue-resisting steel. It has a wide quenching-range, making it easy to heat-treat for the ideal balance of hardness and wear-resistance. Bethlehem Hollow also makes long-wearing threads and tough shanks. It comes in rounds, hexagons and quarter-octagons, generally in lengths of 18 to 25 ft. It's good steel to keep in mind for your next drilling job.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM HOLLOW DRILL STEEL
TWO GRADES: CARBON • ULTRA-ALLOY (chrome inoly)



World's fastest,
heavy vertical
auger drill



NEW HEAVY-DUTY McCARTHY
drills 8-inch holes 100 feet deep
in sandrock in 40 minutes *

This new heavy-duty drill, Model 106-24, is used for blast hole drilling, general exploration, foundation drilling, dewatering operations, deep post holes, etc., and is a companion drill to McCarthy 106-8 using 8" dia. augers and smaller. Has high-speed power take-off—one speed for rock, one speed for other earth formations. Outside power take-off for large augers at one-half speed. Hydraulically operated throttle valve.

AUGER DIAMETER	DEPTH OF BORE
20 INCHES	30 FEET
16 "	40-50 "
12 "	60-80 "
8 " and under	100 "

8" diameter auger bores through shale and sandrock. Larger diameter auger bores through shale and hardpan formations. The choice of contractors where the going is tough.

* Ohio River Colliery Co., Cheshire, Ohio



For complete information
contact The Salem Tool Co.

THE SALEM TOOL CO.
765 S. ELLSWORTH AVE.
SALEM, OHIO • U. S. A.

CONCRETE FORMS—A handbook of panel designs for building forms used in light concrete wall construction is based on extensive research by a large manufacturer of form ties and other accessories for use with concrete forms. Included in the book are modular panel designs, fabrication details and explanatory diagrams.—**Richmond Screw Anchor Co., Inc., 816 Liberty Ave., Brooklyn 8, N.Y.**

WELLPOINTS—Just published is a new 4-p., three-color bulletin describing the complete line of long life, low maintenance wellpoint and jetting pumps manufactured, and sold or rented by the **Foundation Equipment Corp., 38th Ave and 10th St, Long Island City 1, N. Y.** A complete description is also included on the new free-flow wellpoint, together with information on fittings and adapters.

ROCK DRILLING—Driller's Handbook, a 68-p., pocket-size booklet contains a complete description of all common rocks. Readers are instructed how to judge the speeds with which various rocks can be drilled. A method by which the driller can establish a point system to figure drillability and drilling cost is also outlined. Featured is a glossary of approximately 150 commonly used rock and mineral terms. Modern drilling equipment ranging from light hand rock drills to truck-mounted rigs is illustrated and described. Booklet copies are priced at \$1.50 each.—**Davey Compressor Co., Kent, Ohio.**

ALL WHEEL DRIVE—A two-color bulletin (No. 550301) illustrates the new Marmon-Herrington Fork All-Wheel drive trucks and describes their salient features: constant velocity, universal joint steering ends; full-floating front-driving axles; heavy-duty engines; synchro silent transmissions; extra strong frames; gear-driven auxiliary transmissions. **Marmon-Herrington Co., Inc., 1519 W. Washington St., Indianapolis, Ind.**

WHITE CEMENT — A technical guide on white cement, recently published by the **Medusa Portland Cement Co., 1000 Midland Building, Cleveland 15, Ohio**, contains a wealth of general information and specification data on procedures to follow in construction. Included are methods on how to make beautiful white or colored concrete and how to produce concrete that has excellent light reflecting qualities. Use specifications are also given for proportions and mixing and for producing waterproof white concrete. Illustrations show examples such as stucco, terrazzo, etc. Federal and ASTM specifications are also listed.



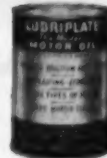
"THIS LUBRICANT
DOUBLES THE
LIFE OF GEARS"

—says TRINITY ALPS LUMBER CO.
Hayfork, California

"Our trucks have a forty mile county road logging haul over adverse grades, each truck making two complete round trips each working day. Our shop foreman in charge of maintenance, reports that with the use of LUBRIPLATE Lubricants there has been a minimum of truck down time and replacements of bearings and gears. The double reduction gears with LUBRIPLATE APG-140 has shown a saving of fifty per cent over previous operations."

**REGARDLESS OF THE SIZE AND
TYPE OF YOUR MACHINERY,
LUBRIPLATE GREASE AND
FLUID TYPE LUBRICANTS WILL
IMPROVE ITS OPERATION AND
REDUCE MAINTENANCE COSTS.**

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



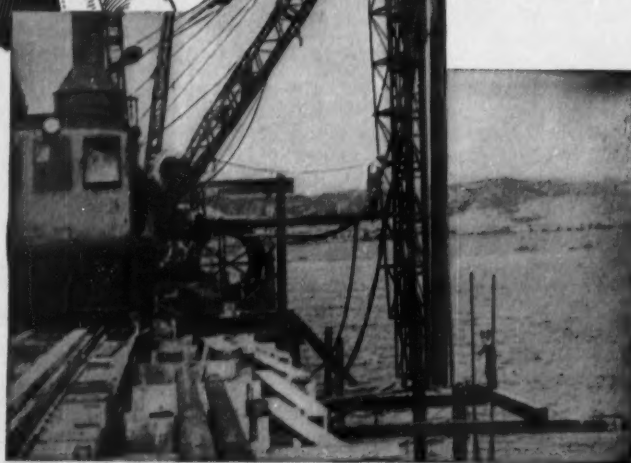
For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.





THIS *Washerless* COUPLING

has no equal in convenience, efficiency and safety in every high or low pressure service . . . steam, gas, air, water, hydraulic.



"GJ-BOSS" *Ground Joint* *Female Coupling, STYLE X-34*

The original washerless hose coupling, with a reputation for safe, reliable service under hard use and rough handling. Ground joint union between stem and spud provides leakproof, trouble-free seal. All parts malleable iron or steel, rustproofed. Furnished with "Boss" Offset and Interlocking Clamps. Sizes 1/4" to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods

DIXON *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO., LTD. TORONTO

ASSOCIATE COMPANIES: RUCK IRON COMPANY INC. QUAKERTOWN, PA. • PRECISION DRAGON STEEL COMPANY, CAMDEN, N.J.

LIGHTWEIGHT PUMPS—Bulletin 55LW describes a new line of centrifugal pumps with capacities ranging from 5,500 to 18,000 gph. The smallest of the line, the junior flyweight weighs only 52 lb.—**Rice Pump & Machine Co., Belgium, Wis.**

CONCRETE EQUIPMENT—A new 16-p illustrated catalog, No. 552, illustrates the complete Stow line of concrete equipment. Complete data is given on their universal electric and gasoline concrete vibrators, portable concrete grinders, gasoline and electric rotary trowels, and concrete vibrating screeds. The features of the G34 model (34 in. dia) Roto-Trowel are discussed in detail. For your copy write **Stow Manufacturing Co., 31 Shear Street, Binghamton, N. Y.**

SAFETY EQUIPMENT—A new general catalog on Industrial Safety Equipment is designed as an everyday safety manual with four major sections—eye protection, head protection, respiratory protection, and welding. — **Willson Products, Inc., Reading, Pa.**

ALL-PURPOSE LOADER—The Pettibone Cary-Lift, is described in a new 36-p brochure just released. Numerous photographs demonstrate how the versatile machine can tackle a wide variety of jobs. Emphasized is the rig's unusually long reach and ability to extract itself from mud, snow, etc. without assistance from other machines. Complete operating and construction features, specifications and accessory equipment are detailed on four models—Fork, Swivel Clam, Sling and Super-Sling. — **Pettibone Mulliken Corp., 4700 Division St, Chicago, Ill.**

FRONT-END LOADER — A new booklet describing the Sherman Front-End Loader for Fordson major diesel tractors is offered in two models, the AJ-25, with 2,500-lb capacity, and the AJ-20 with 2,000-lb load capacity. The booklet contains on-the-job illustrations of many of the uses of these loaders. — **Sherman Products, Inc., Dept. 211, 3200 W. 14 Mile Road, Royal Oak, Mich.**

MASONRY PLANNING—Practical, step-by-step guidance for planning and building all common types of concrete, concrete block, stucco and similar masonry structures is given in a 376-p book called "Simplified Masonry Planning and Building." Written by J. Ralph Dalzell, an architect who has written several books on construction methods, the techniques described are in line with recommendations of such research organizations as the Portland Cement Association. It is well illustrated. — **McGraw-Hill Book Information Service, 327 W. 41st St., New York, 36, N. Y.**

Engineered Blasting keeps 'Contractors Hill' from toppling into Panama Canal



Carving the menace out of Contractors Hill. Task calls for ROCKMASTER® precision. Atlas supplied all the caps — much of the explosives for this ticklish blasting job.

Since 1938, a menacing fissure has been slowly widening in Contractors Hill, 330 feet above the Panama Canal. Last year, Tecon Corp., Dallas, Texas, undertook the challenging job of carving 4,500,000 tons of treacherous, highly fractured rock from the face. The problem was to blast . . . but without toppling the mountain, and with little except dust falling into the Canal itself!

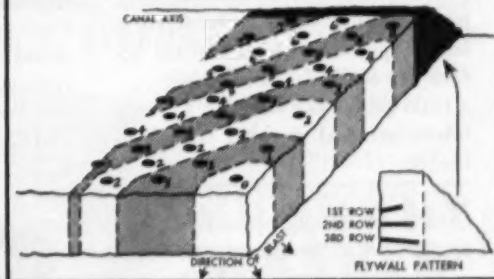
Using ROCKMASTER® millisecond delay electric blasting caps, the contractor carefully selects timing patterns. A bench is made by blasting vertical holes up to within 20 feet of the face. Horizontal hole blasting breaks the remaining 20 feet in place.

Vertical hole blasts are bottom-initiated—ROCKMASTER caps being chosen to move the base of the face out first, and direct throw away from the Canal. Triple rows of horizontal holes are timed to fire: top, bottom, middle. This sequence creates a fracture line in the last 20 feet, decreases back-break, and assures breakage *in place*. Thus, broken rock can't pitch forward into the Canal.

On tough blasting jobs like this, the "custom-tailored" ROCKMASTER method can't be beat for extreme flexibility and control. Let your Atlas representative show you how ROCKMASTER can go to work for you.

BLAST PATTERNS

TYPICAL PATTERN USING ROCKMASTER®
MILLISECOND DELAY ELECTRIC BLASTING CAPS

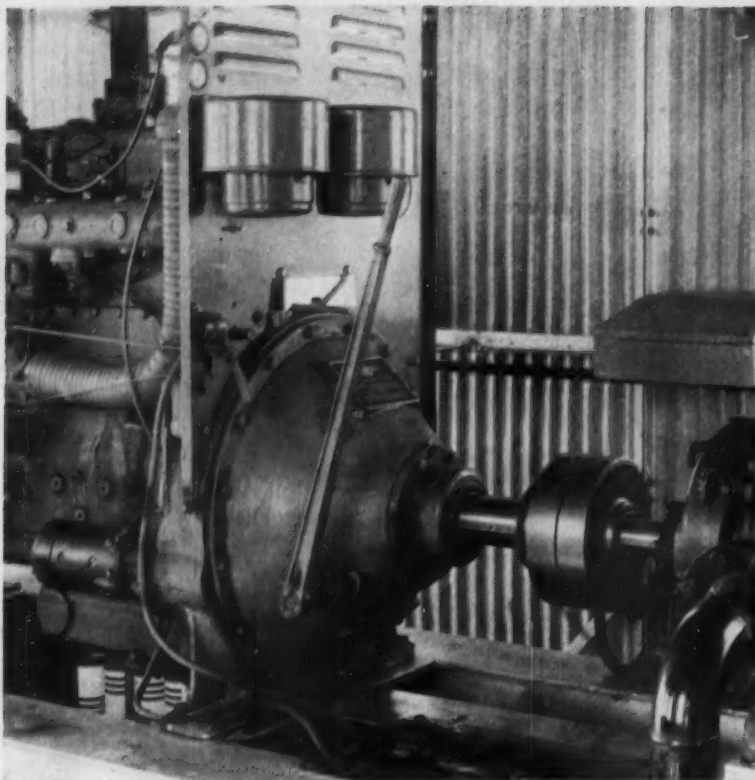


ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

Offices in Principal Cities



Twin Disc Friction Power Take-Offs are provided in single-plate 6.5" to 24"; double-plate 11.5" to 24"; triple-plate 14" and 18". Housing sizes No. 6 SAE to No. 00 SAE. Capacities to 650 hp. Typical installation shown is on a Waukesha gas engine. Request Bulletin 129-C.

Known by the power it applies

To both the engine manufacturer and user, the power take-off—connecting driving and driven equipment—is one of the most critical components in the driven line. Here is the vital link where all horsepower and torque must be transmitted before any work is accomplished . . . a link which can become a costly "Achilles" heel through failure on the job.

In specializing exclusively since 1918 in the design, manufacture and application of industrial drives for powered equipment, Twin Disc has developed Friction Power Take-Offs that assure trouble-free operation throughout the working life of machines to which they are applied. Designed for superior performance, they

are backed for their lifetime with unparalleled service.

That's why the Twin Disc Power Take-Off is known by the power it applies. Throughout industry, you see them behind engines built by the world's leading manufacturers . . . for both manufacturers and users know *this* Power Take-Off will never become an "Achilles" heel on the job, to either operation costs or production schedules.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Seattle • Tulsa



ALLIS-CHALMERS

CATERPILLAR

climax

Continental



INTERNATIONAL
HARVESTER



Superior



WISCONSIN



All trade marks shown above are Reg. U. S. Pat. Off.

EQUIPMENT RENTAL RATES—AED

Continued from page 31

Type of equipment	Per month	Per week	Per day
Shovels & backhoes, dipper incl:			
Crawler, gas $\frac{1}{2}$ cy.....	\$1,176.00	\$365.00	\$114.00
Crawler, gas $1\frac{1}{2}$ cy.....	2,012.00	638.00	214.00
Crawler, gas $2\frac{1}{2}$ cy.....	3,299.00	1,010.00	362.00
Crawler, diesel $\frac{1}{2}$ cy.....	1,275.00	413.00	135.00
Crawler, diesel $1\frac{1}{2}$ cy.....	2,271.00	734.00	243.00
Crawler, diesel $2\frac{1}{2}$ cy.....	3,961.00	1,213.00	429.00
Backhoes, crawler, gas $\frac{1}{2}$ cy.....	1,145.00	359.00	117.00
Backhoes, crawler gas $1\frac{1}{2}$ cy.....	2,011.00	629.00	211.00
Backhoes, crawler diesel $\frac{1}{2}$ cy.....	1,255.00	414.00	136.00
Backhoes, crawler diesel $1\frac{1}{2}$ cy.....	2,436.00	802.00	277.00
Backhoes, truck, gas $\frac{1}{2}$ cy.....	1,352.00	378.00	123.00
Backhoes, truck, diesel $\frac{1}{2}$ cy.....	1,612.00	516.00	159.00

Trenching machines:			
Ladder type, gas $8\frac{1}{2}$ ft., 30".....	1,166.00	404.00	128.00
Ladder type, diesel $8\frac{1}{2}$ ft., 30".....	1,329.00	452.00	157.00
Wheel type, gas 6-8', 24".....	931.00	308.00	108.00
Wheel type, diesel 6-8', 24".....	1,008.00	342.00	120.00

Vibrators:			
Electric, 18 ft shafting			
$\frac{3}{4}$ -1 hp.....	52.00	18.00	6.55
$1\frac{1}{2}$ -2 hp.....	62.50	22.00	7.20
$2\frac{1}{2}$ -4 hp.....	68.75	23.50	7.75
Elec, 180-cycle, gas & 1 vibr.....	150.00	49.00	16.00
Gas, 21 ft shafting up to $1\frac{1}{2}$ hp.....	67.50	23.25	7.48
Gas, 28 ft shafting $2\frac{1}{2}$ -3 hp.....	87.75	29.25	9.75
Gas, 28 ft shafting $3\frac{1}{2}$ -4 hp.....	91.75	30.50	10.25

Tractors, diesel crawler:	hp†			
AC Mod. HD5, 1955.....	40	553.00	181.00	59.50
AC Mod. HD6, 1955.....	72	968.00	327.00	108.00
AC Mod. H 16, 1955.....	116	1,419.00	473.00	159.00
AC Mod. HD 16-C, 1955, tr.....	116	1,574.00	531.00	172.00
AC Mod. HD21, 1955.....	204	1,983.00	645.00	202.00
Cat. Mod. D2, 1955.....	38	478.00	158.00	48.50
Cat. Mod. D4, 1955.....	48	627.00	189.00	61.50
Cat. Mod. D6, 1955.....	75	930.00	295.00	93.50
Cat. Mod. D7, 1955.....	102	1,199.00	385.00	118.00
Cat. Mod. D8 (DD), 1955.....	150	1,811.00	535.00	179.00
Cat. Mod. D8, 1955, tr.....	191†	1,957.00	650.00	209.00
Cat. Mod. D9 (DD), 1955.....	236	2,701.00	888.00	308.00
Cat. Mod. D9, 1955, tr.....	288*	3,027.00	1,031.00	368.00
IH Mod. T6, 1955.....	33	316.00	106.00	36.25
IH Mod. T8, 1955.....	43	420.00	143.00	48.25
IH Mod. T8A, 1955.....	34	451.00	150.00	44.50
IH Mod. T9, 1955.....	41	555.00	180.00	56.50
IH Mod. TD 14A, 1955.....	86	791.00	260.00	81.00
IH Mod. TD 18A, 1955.....	80	1,001.00	334.00	110.00
IH Mod. TD24, 1955.....	161	1,612.00	543.00	183.00
IH Mod. TD24, 1955 tr.....	209*	1,844.00	628.00	222.00
Oliver Mod. OC-3, 1955.....	22	296.00	96.00	29.00
Oliver Mod. AG-3, 1955.....	31	348.00	103.00	38.00
Oliver Mod. AG, 1955.....	31	375.00	122.00	42.00
Oliver Mod. OC-12, 1955.....	48	542.00	175.00	59.00
Oliver Mod. DD, 1955.....	61	664.00	219.00	70.00
Oliver Mod. OC-18, 1955.....	133	1,257.00	408.00	126.00

*† drawbar hp † hp at flywheel
* is torque converter drive
** hp figures represent net engine hp

Buildozers, for tractor of:			
Up to 42 hp (drawbar).....	146.00	48.00	16.25
66-88 hp.....	224.00	71.50	23.75
135-160 hp.....	327.00	107.00	35.25

Tractor loaders:			
Crawler mounted, 1- $1\frac{1}{2}$ cy.....	828.00	267.00	79.75
Rubber mounted diesel,			
2-whl drive $\frac{1}{2}$ -1 cy.....	605.00	192.00	62.75
4-whl drive $1\frac{1}{2}$ - $1\frac{1}{2}$ cy.....	1,097.00	360.00	128.00
Rubber mounted gas,			
2-whl drive $\frac{1}{2}$ - $\frac{1}{2}$ cy.....	500.00	166.00	51.75
4-whl drive 1- $1\frac{1}{2}$ cy.....	801.00	255.00	94.50

Tractors with cable scrapers:			
3-wheel tractor with 2-wheel cable scraper (heaped mass)			
6½ to 8 cy.....	1,457.00	486.00	158.00
11½ to 14 cy.....	2,223.00	766.00	244.00
17 to 19 cy.....	2,477.00	753.00	248.00
17 to 20 cy.....	2,863.00	945.00	305.00
4-wheel tractor with scraper:			
8½ to 15½ cy.....	1,488.00	440.00	129.00
11½ to 16 cy.....	1,490.00	465.00	111.00
11 to 14 cy.....	2,415.00		
17½ to 23 cy.....	2,764.00	817.00	269.00

Graders:			
Diesel, up to 16,500 lb.....	532.00	167.00	57.00
Diesel, 16,501-22,000 lb.....	797.00	261.00	81.00
Diesel, 22,001-24,000 lb.....	947.00	315.00	96.00
Diesel, over 24,000 lb.....	1,052.00	326.00	103.00

Rooters:			
Heavy, 7,001-11,000 lb.....	248.00	77.50	23.75
Scrapers, without power units:			
Heaped mass 7-19 cy.....	459.00	147.00	45.00
Heaped mass 13½-17 cy.....	715.00	226.00	70.00
Heaped mass 17-22 cy.....	944.00	311.00	96.00

Big Jobs of The Month . . . Next page



HIGH STRENGTH STEEL BOLTS and MIL-CARB[®] Carburized WASHERS

Used Exclusively on Steel Framing of New Caterpillar Tractor Plant

In the construction of the Caterpillar Tractor Company's new, modern plant at Decatur, Ill., (Caterpillar's sixth U. S. Plant) the Mississippi Valley Steel Co., of Decatur, specified High Strength Steel Bolts and MIL-CARB Washers exclusively for this important contract... supplied by GARY SCREW AND BOLT DIVISION, Pittsburgh Screw and Bolt Corporation, Gary, Ind.

This installation is typical of the rapidly growing recognition among structural engineers and contractors of the superior value of high strength bolted steel construction. More and more they are finding that hardened steel bolts, with properly hardened washers, can be torqued up to produce a greater clamping force than cooling of rivets . . . providing up to 25% higher fatigue resistance than comparable riveted joints . . . plus faster and more economical construction.

And because no bolt assembly is any better than its washers, high-strength bolting should include MIL-CARB Carburized Washers . . . fabricated from Prime Carburizing Quality Special Soundness Steel to insure uniform quality control, always equal to the rigid specifications for this type of construction.

Remember:
"NO BOLT IS ANY BETTER THAN ITS WASHERS"

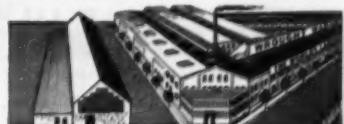
Distributed by Leading Bolt Manufacturers and U. S. STEEL SUPPLY DIVISION
UNITED STATES STEEL CORPORATION
South LaSalle Street
CHICAGO 4, ILLINOIS

MILWAUKEE WROTH WASHERS

Since 1887

WROUGHT WASHER MFG. CO.

2247 S. BAY STREET
MILWAUKEE 7, WISCONSIN



The World's Largest Producer of Washers

**All Madesco Blocks Are Engineered
to Serve Your Special Service Needs**

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel supply you with MADESCO products.

sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO BLOCKS



MADESCO TACKLE BLOCK CO., EASTON, PA.

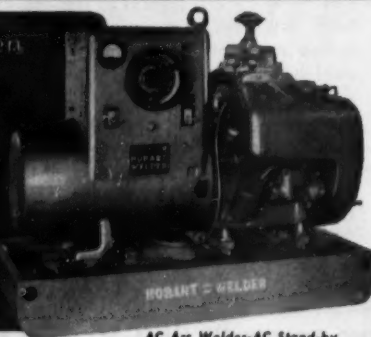
A Subsidiary of Nazareth Cement Company

MAE-MB-104,55

Air-Cooled Engine Driven
Combination **Arc**

Welder and Power Plant

Power for tools, lights and
arc welding ANYWHERE!



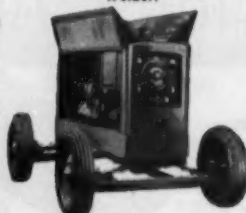
Speed up your work and cut welding costs with this revolutionary new type of Hobart combination unit. Hobart's ingenious generator design lets a single generator and air-cooled gas engine provide power—either for welding or 110/220-volt power, all at the press of a button. Surprisingly compact and lightweight for easy moving. Can be mounted on truck or trailer—ready on a moment's notice.

And don't forget, Hobart has a type and size gas drive arc welder for every construction job—large or small. "Contractor Special" is a full capacity 250-ampere DC welder, yet compact and lightweight for easy moving from job to job. For extra heavy duty welding Hobart offers DC Gas Drive Welders ranging up to 600-ampere capacity.

AC Arc Welder-AC Stand-by
Power Unit. Power for tools,
lights and arc welding any-
where.



"Contractor Special" Arc
Welder.



Gas Drive DC Arc Welder.

HOBART WELDERS

Tear off and MAIL TODAY!

• HOBART BROTHERS CO., Box 6105, Troy, Ohio, U.S.A. Telephone 21223

Without obligation, please send information on items checked.

☐ AC Arc Welder-AC Power Unit ☐ "Contractor Special"
☐ DC Gas Drive Welders ☐ Electrode samples for _____

NAME _____ POSITION _____

FIRM _____

ADDRESS _____

SOME BIG CONTRACT AWARDS OF THE MONTH

Priester Construction Co., 1117 Davenport Bank Bldg., Davenport, Iowa. Earth and rock excavation and building foundations for rolling mill at aluminum plant, Riverdale, near Davenport, Iowa, for Aluminum Co. of America, 230 Park Ave., New York City. \$20,000,000.

George Hyman Construction Co., 1010 Vermont Ave., N.W., Washington, D.C. Seven-story superstructure, U.S. Senate office building for U.S. government, c/o the Architect, U.S. Capitol, Washington, D.C., \$17,200,000

O. S. Burke Co., 1032 Fisher Bldg., Detroit, Mich. Eastland shopping center 476,000 sq. ft Hudson store and tenant stores at Eight Mile and Kelly Roads, Harper Woods, Mich., for J. L. Hudson Co., 1206 Woodward St., Detroit, Mich. \$15,000,000.

S. S. Silberblatt, Inc., 25 W. 45th St., New York 19. Foundation and superstructure, steel panel facing for Linden Houses, Brooklyn, N.Y., for New York City Housing Authority, 299 Broadway, New York 7, N.Y. \$12,672,000.

L. H. Hoffman Co., 715 S.W. Columbia St., Portland, Ore. Construction of sulphate pulp mill at Cosmopolis, Wash. for Weyerhaeuser Timber Co., Tacoma Bldg. Tacoma, Wash. \$10,000,000.

Joseph L. Mascarelle, Inc., 42 First St., Hackensack, N.J. Shopping center including two-story basement, Bamberger store, underground delivery tunnel, utility plant, water tower, for Paramus, N.J. Garden State Shopping Center, c/o R. H. Macy, Herald Square, New York City. \$10,000,000.

F & C Engineering Co., Box 2426, Houston, Tex. Low sill structure, Old River Control, Concordia Parish, Louisiana, for U. S. Engineers, foot of Prytania St., New Orleans, La. \$9,892,629.

George A. Fuller Co., Munsey Bldg., Washington, D.C. Office building at Richmond, Va. for Reynolds Metals Co., Reynolds Metals Bldg., Richmond 19, Va., and Ebasco Services, Inc., 2 Rector St., New York City. \$7-\$8,000,000.



*All-welded 100-foot Vierendeel span
across Umpqua River, Douglas
County, Oregon.*

All-welded Vierendeel spans simplify bridge designs

FOUR spans incorporating all-welded Vierendeel girders provide simple, economical construction for three new bridges in Douglas County, Oregon.

Typical of construction is the 100-foot span shown above that provides a 19-foot, 6-inch clear roadway. The girders are 6 panels each with lower and upper chords 27-WF-94 beams. Floor beams are 24-WF-76 beams supporting five 12-inch stringers. Deck is open mesh steel.

Fast, low-cost shop fabrication of girders is accomplished with Manual Lincolnwelding of fillets in granular flux after tack welding with hand electrodes.

Construction of the three bridges supervised by Floyd C. Frear, Douglas County Engineer.

Studies in Structural Arc Welding available to bridge engineers and structural designers. Write on your letterhead to



Speeds fabrication of trusses with semi-automatic welding of fillets with Manual Lincolnweld.

THE LINCOLN ELECTRIC COMPANY

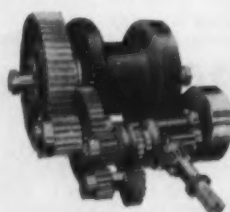
Dept. 2705 • Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment



An equipment lesson from the Alcan project

... 61 CARCO winches needed on the job



Doubling the pulling power of the most powerful crawler tractors calls for a gear train that's tough and rugged. The Carco Model J winch converts tractor power into line pull efficiently and directly through a 4-stage, constant mesh gear train. The doubled line pull is made possible by a high ratio of gear reduction. As faster line speed is generally desired for paying out the line, a lower gear ratio is provided in reverse. Heavy-duty gears and shafts of heat-treated special alloy steel guarantee a large overload capacity. Precision cut, gears and shafts, with anti-friction bearings, operate in a continuous oil bath. Rugged simplicity and fewer parts make Carco winches more dependable and easier to service.

Probably the most versatile equipment on the Alcan project in British Columbia are powerful crawler tractors equipped with dozers and Carco winches. So useful has this "team" proven that 61 Carco winches and hoists have been purchased for this job... the largest number of tractor winches ever known to be used on a construction project.

Pictured is a Carco Model J winch on an International TD24 using tractor's own power to pull this heavy crawler up a steep hillside so it could doze access road down hill.

Powerful, mobile Carco winches double tractor pulling power and increase tractor "reach"... they will earn their way for towing, hoisting, loading as well as for emergency rescue equipment. Remember, you can expect greater value from the leading producer, and get it from Carco, first in winch production. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branches at Portland, Ore., and Franklin Park, Ill.



CARCO

WINCHES FOR ALL
INDUSTRIAL TRACTORS

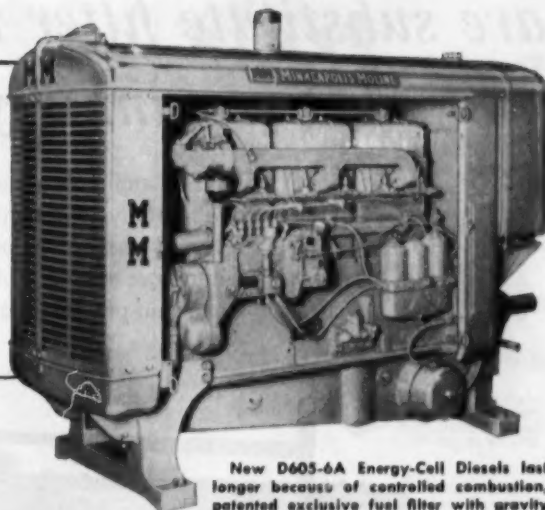
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WHY IT PAYS TO OWN INDUSTRIAL DIESELS WITH REMOVABLE CYLINDER BLOCKS AND HEADS



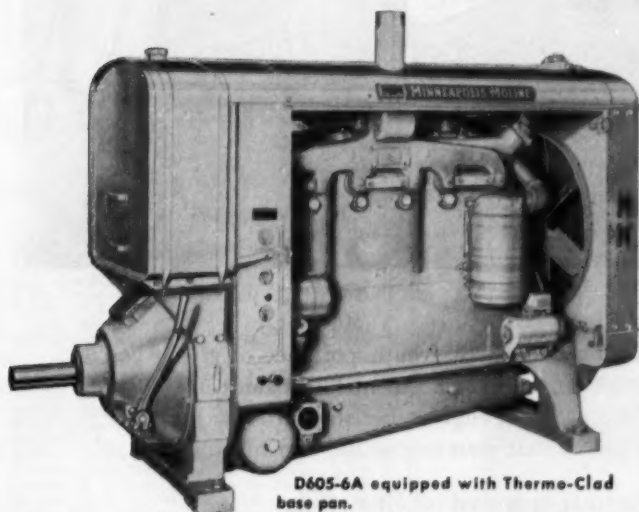
New D605-6A Energy-Cell Diesels last longer because of controlled combustion, patented exclusive fuel filter with gravity and by-pass features, self-cleaning pintle type nozzle, directed cooling of area around combustion chambers.

New MM diesels were developed with *energy-cells* to make them last longer, do more and go farther with less down-time and maintenance.

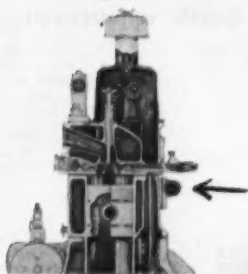
To provide owners with lower cost maintenance when necessary MM diesels are the most advanced and soundly engineered because the cylinder blocks are cast in pairs separate from the crankcase.

YOU GET THESE ADDED ADVANTAGES . . .

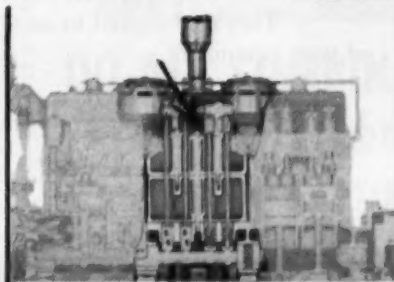
1. Ease of maintenance and low cost emergency service because paired cylinder blocks, pistons, and rods can be removed as a unit by one man.
2. Prolonged time between overhauls by use of close-grain cast iron that provides best cylinder lubrication for reduced wear.
3. Less service due to minimum distortion as MM cylinder heads, cylinder blocks and crankcase are virtually strapped together by full-length steel studs anchored in the main bearing bulkheads. (Transmits combustion pressure to heavy crankcase that has extra depth below center line of crankshaft.)
4. Efficient operation obtained by uniform cylinder expansion . . . the result of controlled cooling and long oil-cooled cylinder wall skirts below ring travel area.
5. "New engine" performance at extremely nominal cost can be obtained right in the field without special tools using factory matched cylinder blocks, pistons, pins, and rings. (Blocks are dowelled to crankcase to assure bore is square with crankshaft and pistons are precision fit to bore . . . equivalent to a factory job.)
6. Lower initial cost stems from high production parts by casting cylinder blocks in pairs separate from the crankcase.



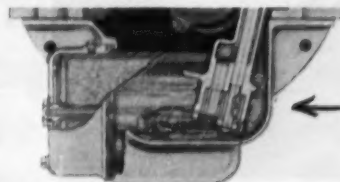
D605-6A equipped with Thermo-Clad base pan.



1. Cylinder head and block assembly shows coolant entrance at hottest point first and extra long skirt wall construction.



2. Close-up of how MM cylinder heads and blocks and crankcase are tied into a single rigid unit with long studs.



3. A D283 feature is extra large oil filter enclosed in base pan, floating-screen oil pump intake, and pump located in bottom of base pan.

Optional Thermo-clad water-blanketed base pans for all units also have oil filter included to give more effective filtering.



MINNEAPOLIS-MOLINE

MINNEAPOLIS 1, MINNESOTA

are substitute filter refills ruining your engine?

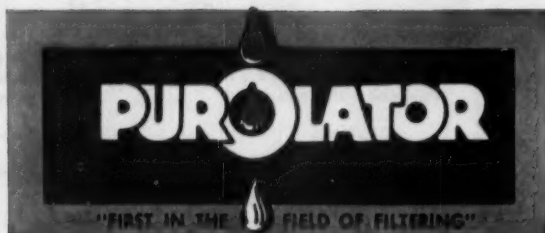
When some "off-brand" or "will fit" oil filter refills are used in a full-flow system, they cannot handle sufficient volume. The by-pass valve opens and pours dangerous unfiltered oil into your engine. This inadequate filtering can ruin precision parts in hours.



Your Caterpillar dealer knows the importance of giving you only manufacturer-approved replacement filters built to Caterpillar's exacting engineering standards by Purolator. He knows that your engine life depends on it.

Use only manufacturer-approved oil filter refills.

They're designed to meet the specific requirements of your equipment.



PUROLATOR PRODUCTS, INC., Rahway, New Jersey and Toronto, Ontario, Canada

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Special 4x6 Steam
Fixed Drum Winch.
Duty single line pull
4,300 lbs. at 90 FPM.

Superior-Lidgerwood-Mundy has the facilities and experience to meet them . . . either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

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Acid	Welding	Fire	& Discharge	Water Pneumatic
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SHIPMENTS
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QUALITY
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Learn latest methods to organize and run work. Prepare for the top jobs.

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that other readers can supply
OR . . . something you don't want—
that other readers can use—

Advertise it in the
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Your inquiry

will have

Special Value . . .

If you mention this magazine, when writing advertisers. Naturally, the publisher will appreciate it . . . but more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

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new style! new comfort! new power!
new Internationals!



Functionally styled for practical good looks!

Here are the new INTERNATIONALS . . . a great new truck line from *any* point of view! Their clean-lined styling is trim and functional — designed to take the rough going of truck work without excessive repair costs.

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They give you real comfort, too! They're driver-designed to let you work longer without fatigue. Loaded with performance and handling features that make hauling jobs easier.

More usable horsepower for BIG money savings!

These great INTERNATIONAL trucks offer more horsepower — develop their power for sustained operation at lower, more economical engine speeds. They're *all truck* with no passenger car engines or components asked to do a truck job. That saves you the BIG money — the over-the-years operating and maintenance money. Drive them today, at your INTERNATIONAL Dealer or Branch.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

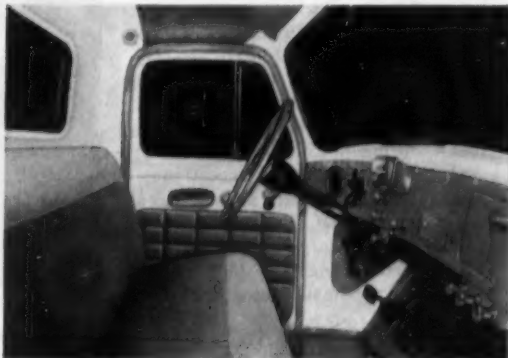
**INTERNATIONAL®
TRUCKS**



***All-Truck Built to
save you the BIG money!***

International Harvester Builds **McCORMICK®** Farm Equipment and **FARMALL®** Tractors . . . Motor Trucks Industrial Power . . . Refrigerators and Freezers

New INTERNATIONAL "S-line" includes light, medium and heavy-duty models from 4,200 to 33,000 lbs. GVW, with 10 gasoline and LPG engines, every modern truck feature.



You relax in REAL comfort in Comfo-Vision cabs. Comfort-angled steering wheel. Low hood for closer view ahead. "Quiet-ride" roof lining, draft-free doors. Choice of 24 solid and optional two-tone exteriors. Optional deluxe cabs have color-keyed interior, chrome trim

Methods Memo . . .

OPENING of the last section of the Ohio Turnpike marks several milestones in highway construction. The 219 mi opened to traffic Oct. 1 is the longest stretch of highway ever opened at one time anywhere. And it connects with the Pennsylvania Turnpike to provide the longest continuous toll highway in the U.S.—a total of 601 mi.

More than 10,000 construction men took part in building the Ohio Turnpike. There were 26 prime contractors on the full 241 mi of the road and more than 300 subs. They put down 7,000,000 sq yd of concrete pavement and built 611 structures, of which 70 were stream crossings. One crossing of the Cuyahoga River required twin bridges 2,682 ft long and 175 ft above river level at the highest point. The Ohio Turnpike Commission says these may be the longest twin bridges in the world.

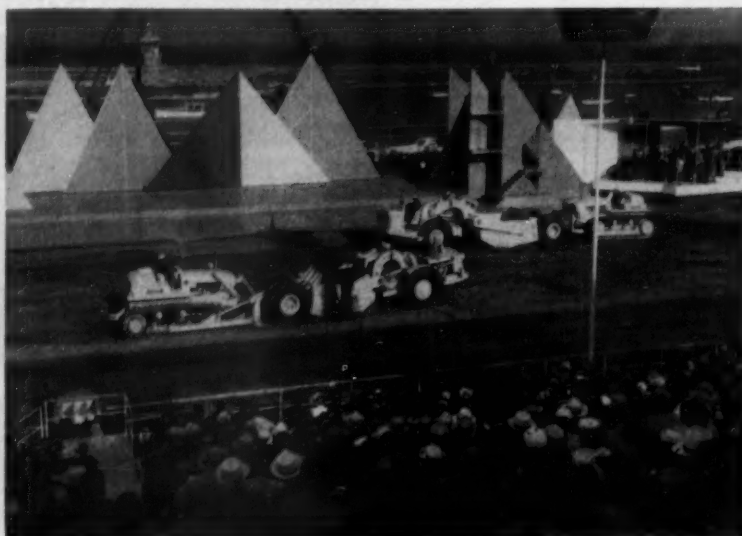
AGC PREDICTS a "steady surge toward a new record-breaking volume of construction" during the next six months. That was the report presented to AGC's Governing and Advisory Boards at their mid-year meeting in Minneapolis. But the AGC report, compiled from a survey of its 84 directors and 124 chapters, said contractors expect competition for jobs will continue to be fierce. One contractor put it this way: "Prospective owners of construction are getting bargains. It looks like they'll keep on getting bargains for another year."

The survey showed that 90% of highway contractors, 87% of heavy construction contractors and 85% of building contractors expect their present high work volume will hold steady or increase during the next six months.

Contractors generally expect materials to be in adequate supply except that deliveries of steel and cement would continue to be slow. Most said they looked for increases in the prices of construction materials.

FLOOD RECONSTRUCTION takes up a big chunk of this issue. We think it should. More construction men and equipment are working in the ravaged river valleys of the Northeast than on any other job in the country. It's unique work, too—the kind contractors rarely are called on to perform.

Associate Editor Al Smith spent two weeks talking with contractors, state officials and Army Engineers in the area. What impressed him most was the mutual confidence between contractors and state officials—most of them men



THE GENERAL PUBLIC—2,218,000 strong—visited the General Motors Powerama in Chicago during September to see diesel power in action. In addition to earthmoving demonstrations such as this (where Euclid C-6 and TC-12 tractors push-load S-7 and S-12 scrapers) they were treated to a huge display of other types of roadbuilding machines. They even saw tractors square dancing, doing the mambo, and performing in rodeo style.



SAFETY AWARD for more than 1,100,000 hr of accident-free work in three months at the Atomic Energy Commission's Hanford Works goes to Frank R. Weir, Jr., (left) Blaw-Knox Co. project manager for the job. James Travis (right), AEC acting area manager, makes the award. John J. Thomas (center), AEC chief of construction, looks on.

who have worked together for years.

In the emergency, officials threw convention to the winds and let contractors go ahead on their own. Construction men came up with all kinds of ingenious schemes for building sound structures swiftly and economically. This mutual confidence really paid off.

HERE'S A JINGLE that seems to be the joint effort of the Massachusetts and Louisville, Ky., AGC chapters:

*"Count that day lost
Whose low descending sun
Sees Bids put in at cost
And Business done for fun!"*

500-CAR PARKING GARAGE

Parking Authority Garage, Philadelphia, Penna. Pozzolith employed in all concrete to obtain, most economically, the compressive strength, durability and low permeability required. Archt.—Harbeson, Haugh, Livingston & Larsen; Contr.—McCloskey & Co.; Structl. Engr.—Sauter & Castor; Mech. Engr.—Moody & Hutchison. Pozzolith Ready-Mixed Concrete supplied by Warner Co., all of Philadelphia, Penna.



Engineers Specify **POZZOLITH** To Improve Control of Concrete Quality

POZZOLITH... the key to—

- lowest possible unit water content*
- close control of entrained air... placing consistency... rate of hardening
- reduced costs

* For a given set of materials and water-cement ratio, unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete. A.C.I., Committee 613, 1944 Report, Page 655. Bureau of Reclamation's current Concrete Manual, Page 130.

Parking garages and other commercial buildings...industrial plants, schools and hospitals...are among the outstanding structures built since 1932 in which Pozzolith has enabled engineering to better control concrete quality.

Engineers and architects employ Pozzolith with confidence because:

1. **proved performance**...100 million cubic yards of concrete produced with Pozzolith for all types of jobs.
2. **applied know-how**...over 70 skilled Master Builders' field technical men for product-use consultation.
3. **available everywhere**...1000 ready-mix and job-site plants now producing concrete with Pozzolith.

Ask us to demonstrate the advantages of Pozzolith for your project.

The

MASTER



BUILDERS



Subsidiary of American-Marietta Company

CARBIDE INSERT? or MULTI-USE?



LOCATION: Granite Falls, Washington.

OPERATING CONDITIONS: Drilling of blast and dowel holes in hard, seamy granite.

TIMKEN® carbide insert bits give more hole per bit through blocky granite on Granite Falls Fishway

THE Scheumann & Johnson Company of Seattle had to drill blast and dowel holes in extremely hard, seamy granite when constructing baffles for the world's largest "vertical-baffle" salmon fishway at Granite Falls, Washington. For highest economy drilling through this hard ground, they chose Timken® carbide insert bits for the job.

Timken carbide insert bits permitted high speed drilling with minimum bit changes. And the job superintendent reports that the Timken carbide insert bits made it possible to drill out full increments of drill steel.

But Timken carbide insert bits may not be the best answer for *all* your drilling problems!

In softer, less abrasive ground, Timken *multi-use* bits, correctly controlled and reconditioned, give you the lowest cost per foot of hole when you can drill out full increments of drill steel.

Both types of Timken bits are interchangeable in the same thread series. And a wide range of different Timken bits fit the same drill steel. When the ground changes, you can switch bits quickly and easily, right on the job.

The Timken Rock Bit Engineering Service can offer you over 20 years of experience in recommending the best bit for the job. We'll be happy to help you. Write: The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit

**your best bet
for the best bit
... for every job**

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